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MORGANTOWN PEOPLE MOVER (MPM) OPERATING, AVAILABILITY, AND MAINTENANCE HISTORY OCTOBER 1976 THROUGH JUNE 1978

C.W. Watt

U.S. Department of Transportation
Research and Special Programs Administration
Transportation Systems Center
Cambridge MA 02142

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OCTOBER 1979

FINAL REPORT

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Prepared for

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Washington DC 20590

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16. Abstract

This report covers the period of operation, dependability, and maintenance history of the Morgantown system (now known as the Morgantown People Mover - MPM) from October 1976 through June 1978. The system shut down for expansion early in July 1978. This report carries on the format and most of the coverage established in the Boeing Aerospace Company report: "Morgantown Personal Rapid Transit O & M Phase Availability and Maintenance History," January 1977 (PB 266-994), which covered the period of September 1975 through September 1976. Since the purpose of this report is to document the reliability, availability, and maintenance history of the MPM system, information on the spare parts usage and hardware changes included in the Boeing report is omitted from this report. System performance in general improved greatly during the period discussed in this report. System availability on an annual basis rose from .880 for the year 1975-76 to .977 for the year 1977-78. Single vehicle reliability, as expressed in terms of mean time between downtime events (MTBDE), rose from approximately 85 hours at the end of the first year to approximately 150 hours at the end of the second year. Mean downtime per event dropped from about 14 minutes at the end of the first year to about9 minutes atthe end of the second; and downtime events per operating day dropped from about 2 per day to less than 1 per day for the entire system. The graphs in the report show that performance varied from month to month, but the trend was upward. Sixty-nine component failure types or other causes accounted for all the downtime recorded during the last year. About 61 percent of all the downtime events were due to only 17 causes. The other 39 percent were spread over 53 causes. A complete computer printout of the entire Morgantown data base is found in the Appendix of this report.

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16. Abstract

This report on the operating, dependability and maintenance history of the Morgantown system (now known as the Morgantown People Mover - MPM) complements the report by Boeing on the system's first year of operation, and covers the period of October 1976 through June 1978. The system shut down for expansion early in July 1978.

System performance in general improved greatly during this period. System availability on an annual basis rose from .880 for the year 1975-76 to .977 for the year 1977-78. Single vehicle reliability, as expressed in terms of mean time between downtime events (MTBDE), rose from approximately 85 hours at the end of the first year to approximately 150 hours at the end of the second year. Mean downtime per event dropped from about 14 minutes at the end of the first year to about 9 minutes at the end of the second; and downtime events per operating day dropped from about 2 per day to less than 1 per day for the entire system. The graphs in the report show that performance varied from month to month, but the trend was upward.

Sixty-nine component failure types or other causes accounted for all the downtime recorded during the last year. About 61 percent of all the downtime events were due to only 17 causes. The other 39 percent were spread over 53 causes.

A complete computer printout of the entire Morgantown data base is appended.

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PREFACE

In this report the operational data of the Morgantown People Mover (MPM) system are analyzed. The data base from which the numbers are drawn is maintained in machine readable form at the Transportation Systems Center in Cambridge. It was supplied to TSC through the Office of AGT Applications (UTD-60) of the Urban Mass Transportation Administration. The preparation of this report was sponsored by John Marino of the same office.

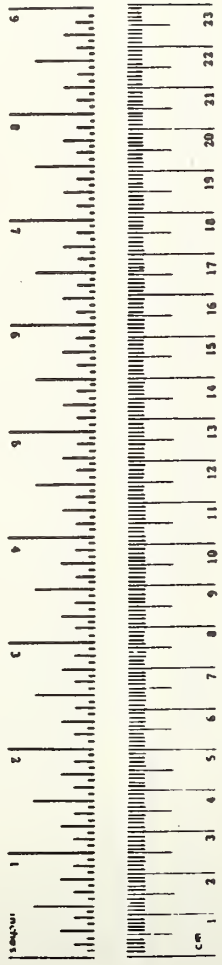
The data base was originally prepared for computer entry by Mary D. Stearns of TSC, Code 241. The additional data processing needed to extract accurate reliability and dependability information from it, which resulted in the data printouts included in this report as Appendixes B and C, was ably performed by Ronit Procaccia, assisted by Jean Tong of Kentron International Limited. Essential inputs in the form of printouts and monthly summaries of MPM performance, prepared by West Virginia University, were supplied by David Mitchell and Robert J. Bates of the staff of MPM in Morgantown. Certain charts, noted in the text, were supplied by UTD-60, having been previously prepared for UMTA by the Mitre Corporation, Metrek Division, McLean, Virginia.

The data base has been thoroughly checked for accuracy and brought into full agreement with WVU records by Philip Morgan of UMTA and Richard Porcaro of TSC.

METRIC CONVERSION FACTORS

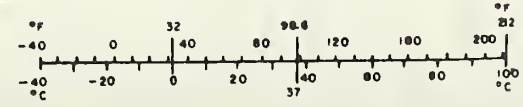
Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.8	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.8	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (exact)			
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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1. INTRODUCTION

This report covers the period of operation of the Morgantown People Mover system (MPM) from October 1976, through June 1978. It carries on the format and most of the coverage established in the report by Frank Musil and A. L. Stone of the Boeing Aerospace Company for the first year of MPM operation. That report, "MPRT O & M Phase Availability and Maintenance History," January 1977, covered the period of September 1975, through September 1976.*

Several data sources were used in assembling this report:

- Daily logs of MPM operation
- Daily and weekly summaries of system operation
- The MPM "Equipment Status and Maintenance Records" (ESMRs)
- Monthly summaries of MPM Availability and Maintenance, prepared by West Virginia University (WVU)
- The above-mentioned Boeing report (for trend indications).

Examples of all these sources are reproduced in the Appendixes.

The System Availability, System/Vehicle Availability, Trip Reliability, and Conveyance Dependability data, derived from the daily logs and handwritten by the Central Control operators, are accessible on magnetic tape at TSC, and a full printout of this data base is included as Appendix B. A summary printout by months is also included as Appendix C. The maintenance information is derived from the above-mentioned WVU monthly summaries.

Since the purpose of this report is to document the reliability, availability, and maintenance history of the MPM system, information on the spare parts usage and hardware changes included in the Boeing report is omitted from this report.

*Morgantown Personal Rapid Transit (MPRT) was the earlier designation of the system. The Boeing Report is obtainable through NTIS, as #PB-266-994.

2. SUMMARY

During the period from September 15, 1976, through June 30, 1978, the MPM system continued successful operation. As can be seen from the charts and tabulations in Sections 3 and 4, it generally matured and became more reliable.

Recordkeeping, and especially the analysis of the records, improved greatly. In the period from January to June 1977, all maintenance action data were entered into the computer at WVU. Monthly printouts of the data are available. Starting in July 1977, each month the MPM staff prepared a thorough analysis of the stored data and produced a standardized report covering all aspects of the system's operation and maintenance. A typical monthly summary report is included as Appendix A.

WVU has successfully operated and maintained the system with their own personnel since August 8, 1976. The data displayed here shows that performance has generally improved since that time. The winter dip in availability, evident in the January-February period for 1976, 1977, and 1978, steadily decreased in depth. The low points were: 64 percent in January 1976; 84 percent in January 1977; and 96 percent in February 1978. (See Figure 3-8 and Appendix G.) In addition, the apparent system mean time between downtime events increased from less than 5 hours in September 1976, to nearly 25 hours in June 1978. (See Figure 3-7.)

Ridership during this period remained about the same as before, with a maximum of 15,000 per day on weekdays, and an average weekday ridership of about 8000. On weekends, the average ridership was less than 1000. Table 2-1 shows the average daily ridership for weekdays only and for weekdays plus weekends. Comparative data from the Boeing report for weekdays plus weekends are also plotted. The data are plotted in Figure 2-1. (Figure 3-1A shows the cumulative number of passengers during the Phase I period of operation.)

Most of the information regarding system performance can be seen in the charts and graphs in Sections 3 and 4. Raw operational data is included as Appendix B and summarized in Appendix C.

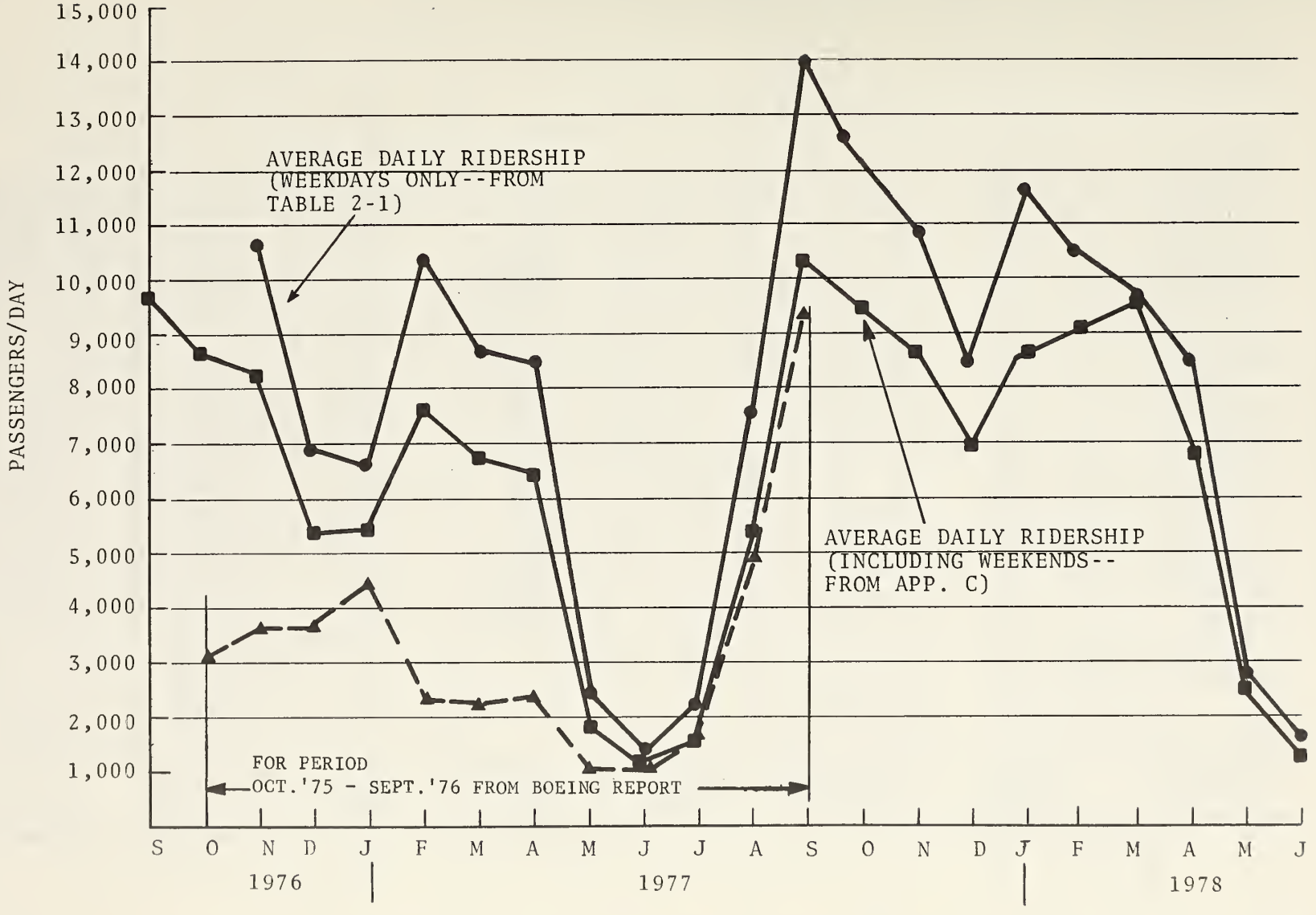


FIGURE 2-1. AVERAGE DAILY RIDERSHIP

TABLE 2-1. RIDERSHIP - WEEKDAYS ONLY (FROM APPENDIXES B & C)

MONTH	TOTAL (From App.C)	- TOTAL WEEKEND	= TOTAL WEEKDAY	NUMBER OF DAYS	- NUMBER OF WEEKEND DAYS	= NUMBER OF WEEKDAYS	AVERAGE PER WEEKDAY
SEPT., 76	213510			29	8	21	
OCT., 76	205747			31	10	21	
NOV., 76	223297	10145	213152	27	7	29	10,658
DEC., 76	116568	4917	111651	22	6	16	6,978
JAN., 77	152978	6601	146377	30	8	22	6,653
FEB., 77	206245	8023	198222	27	8	19	10,432
MAR., 77	181785	9677	172108	27	7	20	8,605
APR., 77	187025	7057	179968	29	8	21	8,570
MAY, 77	46258	4847	41411	27	9	18	2,301
JUNE, 77	32261	1966	30925	30	8	22	1,377
JULY, 77	47982	4010	43972	30	10	20	2,199
AUG., 77	143872	7563	136309	26	8	18	7,573
SEPT. 77	308172	14027	294145	29	8	21	14,006
OCT., 77	292462	23999	268464	31	10	21	12,784
NOV., 77	233672	16796	216876	27	7	20	10,843
DEC., 77	115817	4118	111699	17	4	13	8,592
JAN., 78	253143	7296	245847	29	8	21	11,707
FEB., 78	181352	2668	178684	20	3	17	10,511
MAR., 78	180965	0	180965	19	0	19	9,524
APR., 78	176163	4918	171245	26	6	20	8,562
MAY, 78	36615	3335	33280	15	3	12	2,773
JUNE, 78	37082	2305	34777	30	8	22	1,581

3. OPERATING AND AVAILABILITY DATA

In this section the summary data, tabulated in Appendix C, is graphed and looked at from several points of view.

The data were collected on a daily basis, and daily summaries were prepared. These in turn were summarized weekly in a report, a sample of which is included as Appendix D. The daily entries have been compiled and put on tape at TSC. A printout of this data base is included as Appendix B. A monthly summary is included as Appendix C.

In comparing the performance of MPM to other systems it is proper to point out the limited size of what is considered to be the system from which downtime and failure data were collected. Only stoppages occurring between the Beechurst and Engineering stations were counted in assessing downtime events. The totals of downtime events included in the tabulations and charts in this section refer to downtime events occurring only in this portion of the system. (Stoppages elsewhere are not counted unless their effect was felt in the Beechurst-Engineering area.) Ridership, mileage totals, vehicles used, hours of operation, etc., refer to the entire system; but counted downtime events occurred either in the stations, on the guideway, or in the vehicles on this major portion, a distance of 1.67 of the total 2.1 miles of double-lane guideway.

The charts and tables that constitute this section present the data for 22 months of operation. On July 3, 1978, the system was deactivated to integrate it with the construction of two new stations, the expansion of an existing station, construction of 3.3 miles of new single-lane guideway, and the addition of 28 new Boeing vehicles. That entire effort is known as the Phase II program. Therefore, the data presented here constitute the latest and final performance description of the original system.

Where meaningful for comparison, the already published data for the first 12 months of system life have been reproduced from the Boeing report. (Note that the data base in Appendixes B and C contain the performance of the system from its inception in October 1975).

Definitions

It is well to define the system effectiveness terms used in the MPM system.

System Availability, $A_s = \frac{\text{actual operating time}}{\text{scheduled operating time}}$. This number appears for each day in column 9 of the printout of Appendix B.

System/Vehicle Availability, $A_{sv} = A_s \times$ Fleet Availability Factor (column 10 of Appendix B). The Fleet Availability Factor is a daily average of the measurements, made each 15 minutes, of the ratio: vehicles ready to use/vehicles needed. If there is a vehicle abundance, this will be 1.0, by definition; if there is a vehicle shortage, this will be less than 1.0, and thus diminishes the factor A_s, giving A_{sv}.

Trip Reliability, $R_t = \frac{\text{\# veh. completing trips w/0 interruption}}{\text{\# veh. dispatched}}$ (column 11 of Appendix B).

Conveyance Dependability, $D = A_{sv} \times R_t$ (column 12 of Appendix B). At first glance this seems like a complicated set of measures. As will be seen, however, the daily logs provide the inputs for easily making a running assessment of these numbers.

Performance of the System

With these definitions in mind, the tables and charts will give a graphic picture of how well the system performed. The measures are vehicle-oriented, not passenger-oriented; but they seem to be satisfactory from the operator's standpoint.

Table 3-1 tabulates in column 1 operational data for the first year of operation as presented in the Boeing report. Column 2 presents similar data for the year July 1, 1977, through June 30, 1978. Mean downtime was cut in half during this year compared to the initial year; conveyance dependability was up; average ridership doubled while fleet mileage remained the same; and total downtime dropped from 407 to 76 hours.

TABLE 3-1. MPM SYSTEM OPERATING STATISTICS

	9/15/75 - 9/15/76*	7/1/77 - 6/30/78**
SCHEDULED OPERATING HOURS	3,410.5	3,291.3
ACTUAL OPERATING HOURS	3,003.4	3,214.8
PASSENGERS CARRIED	911,895.	2,007,297.
FLEET MILES	580,096.	554,936.
DOWNTIME EVENTS	923.	362.
TOTAL DOWNTIME, HOURS	407.	76.4
MEAN DOWNTIME/EVENT, HOURS	.44	.21
SYSTEM AVAILABILITY	.8807	.9772
SYSTEM-VEHICLE AVAILABILITY	-	.9709
TRIP RELIABILITY	.9780	.9954
CONVEYANCE DEPENDABILITY	.8620	.9663
TOTAL DAYS SCHEDULED	316	299.
AVERAGE DAILY FLEET MILES	1,836.	1,856.
AVERAGE DAILY PASSENGERS	3,060.	6,713.
AVERAGE NO. OF VEHICLES OPERATING	17.5	20.

*From Boeing report.
**Figures derived from Appendix B.

Figure 3-1A plots cumulative ridership versus month and includes the coverage of the Boeing report.

Figure 3-1B shows monthly ridership.

Figure 3-1C highlights MPM peak ridership.

Figure 3-2A plots cumulative operating hours.

Figure 3-2B shows monthly hours of operation.

Figure 3-3A plots cumulative fleet mileage.

Figure 3-3B plots monthly mileage.

Figure 3-4 plots average number of vehicles.

Figure 3-5 plots cumulative downtime versus cumulative scheduled hours and includes data abstracted from the Boeing report. The effect of winter on downtime can clearly be seen.

Table 3-2 tabulates downtime events for the 22 months covered by this report, data derived from Appendix C. In addition, a system "mean time between downtime events" is calculated (last column) and this multiplied by the average number of vehicles in use should give a measure of the mean time each vehicle is free of trouble. This number is calculated in the column headed "Vehicle MTBDE." Its detailed accuracy is questionable because the average number of vehicles in actual operation is not exactly known. The next to last column of the Appendix C printout is labelled "average vehicles operating," but in fact the raw data is ambiguous as to the exact meaning. This information is plotted in Figure 3-6, showing downtime events per day and downtime per event; and in Figure 3-7 which plots system meantime between downtime events (MTBDE). This reliability factor clearly rises in the summer and drops in the winter.

Figure 3-8 combines on one graph a plot of System Availability (A_s), Trip Reliability (R_t), and Conveyance Dependability (D), for the entire operational period of MPM, Phase I. The effects of winter are clearly seen in 1975-76 and in 1976-77. In 1977-78, however, the dip in February was much reduced. See Appendix G.

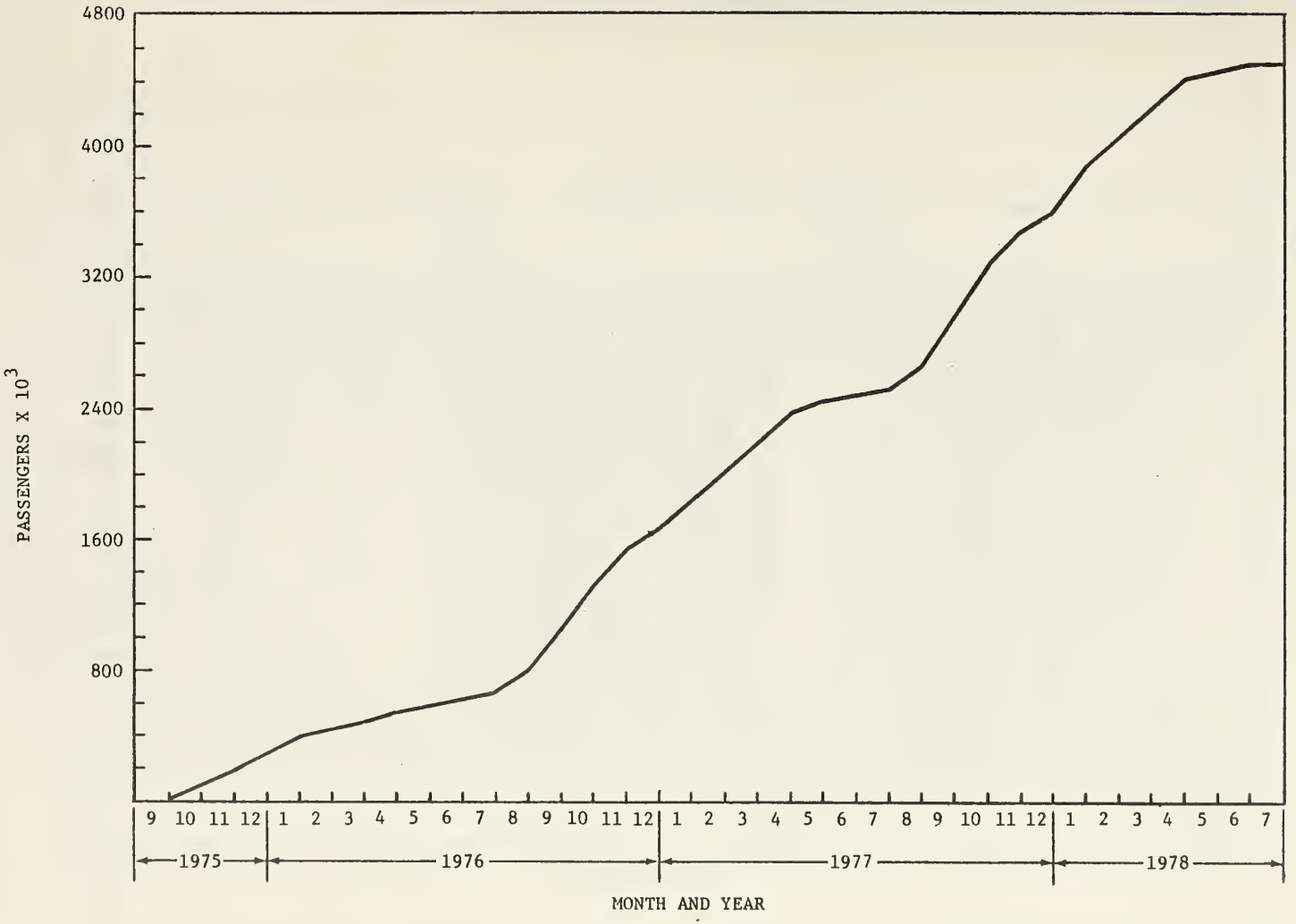


FIGURE 3-1A. CUMULATIVE RIDERSHIP (PREPARED BY MITRE CORPORATION)

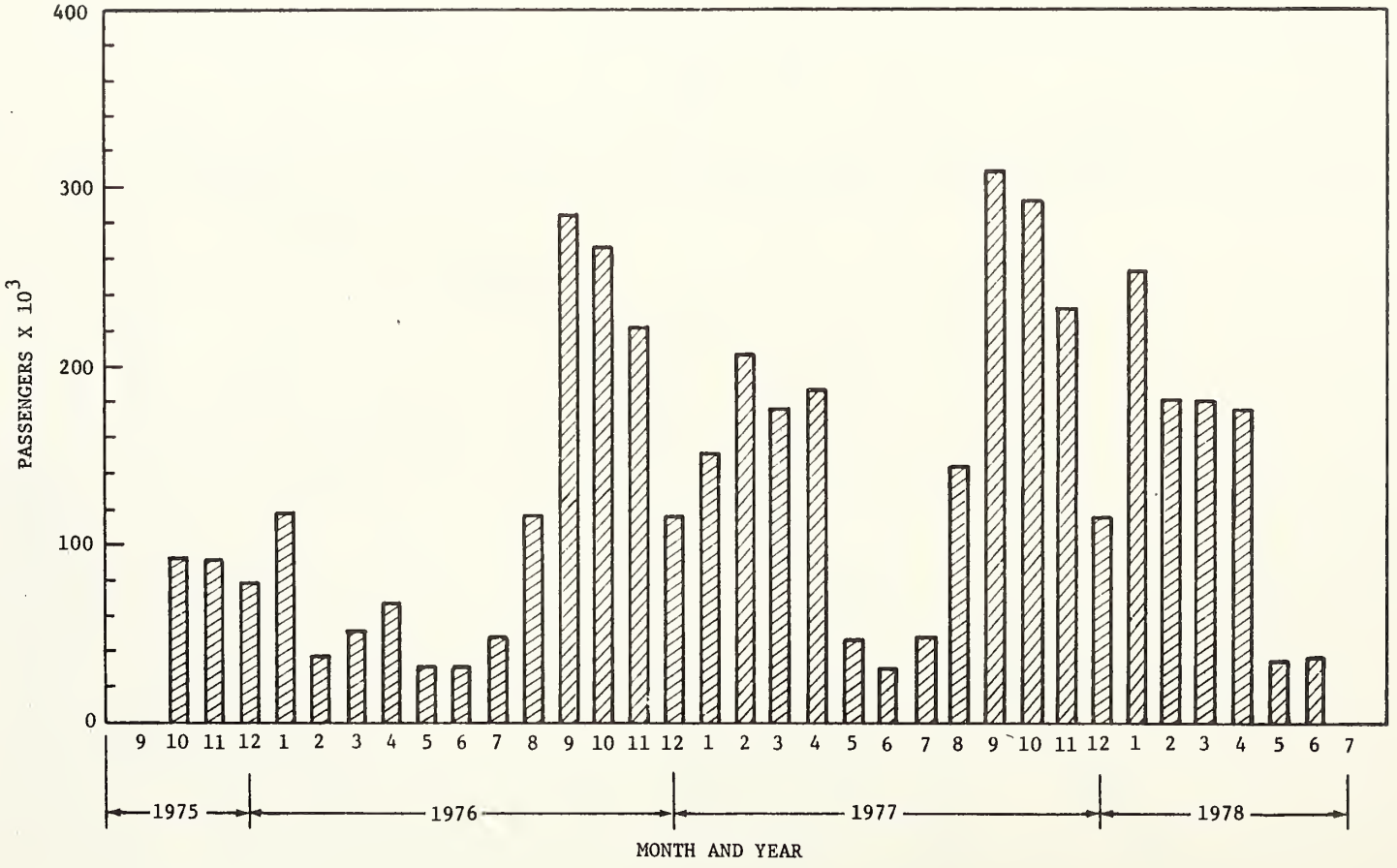


FIGURE 3-1B. MONTHLY RIDERSHIP (PREPARED BY MITRE CORPORATION)

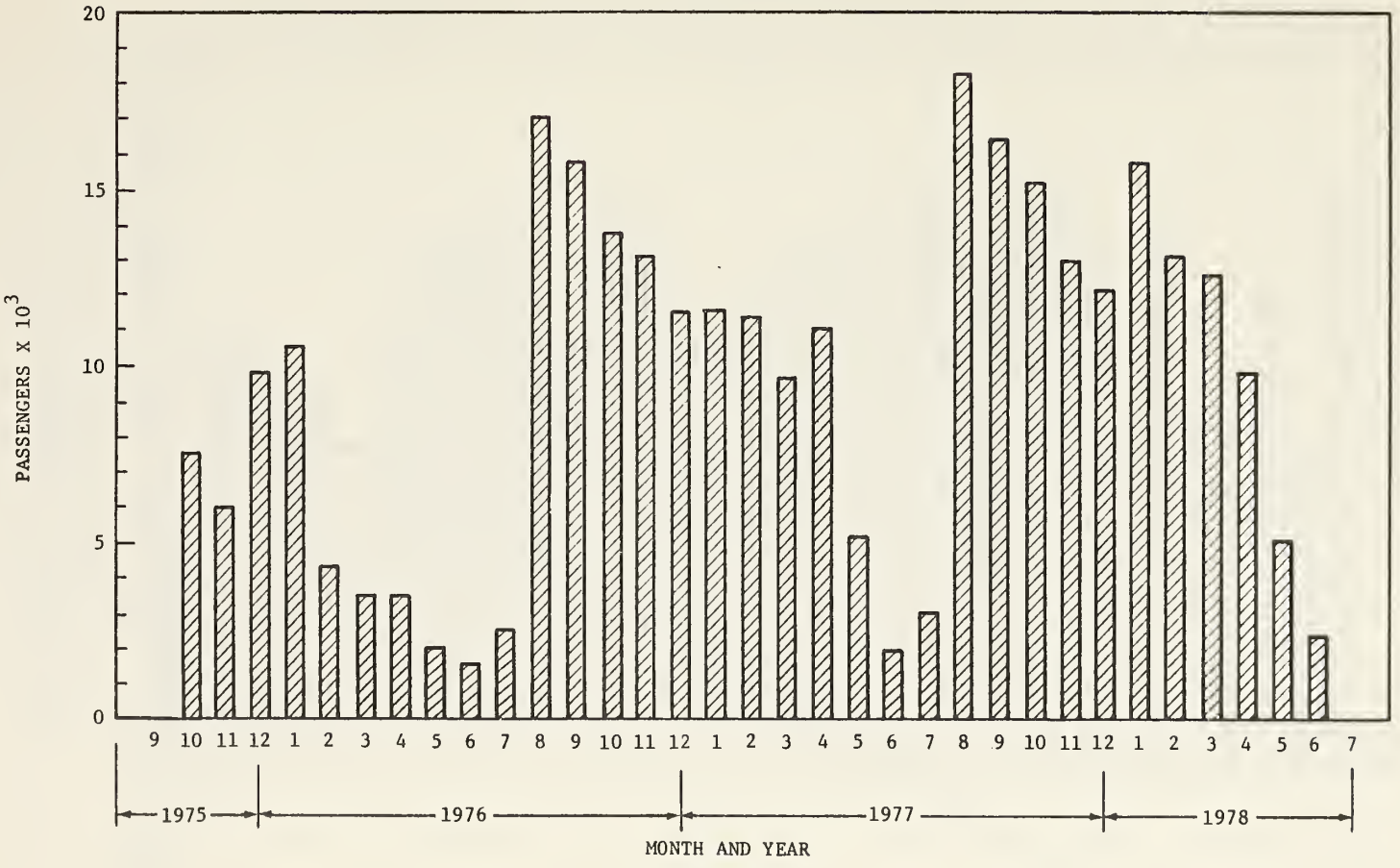


FIGURE 3-1C. LARGEST RIDERSHIP FOR A SINGLE DAY (PREPARED BY MITRE CORPORATION)

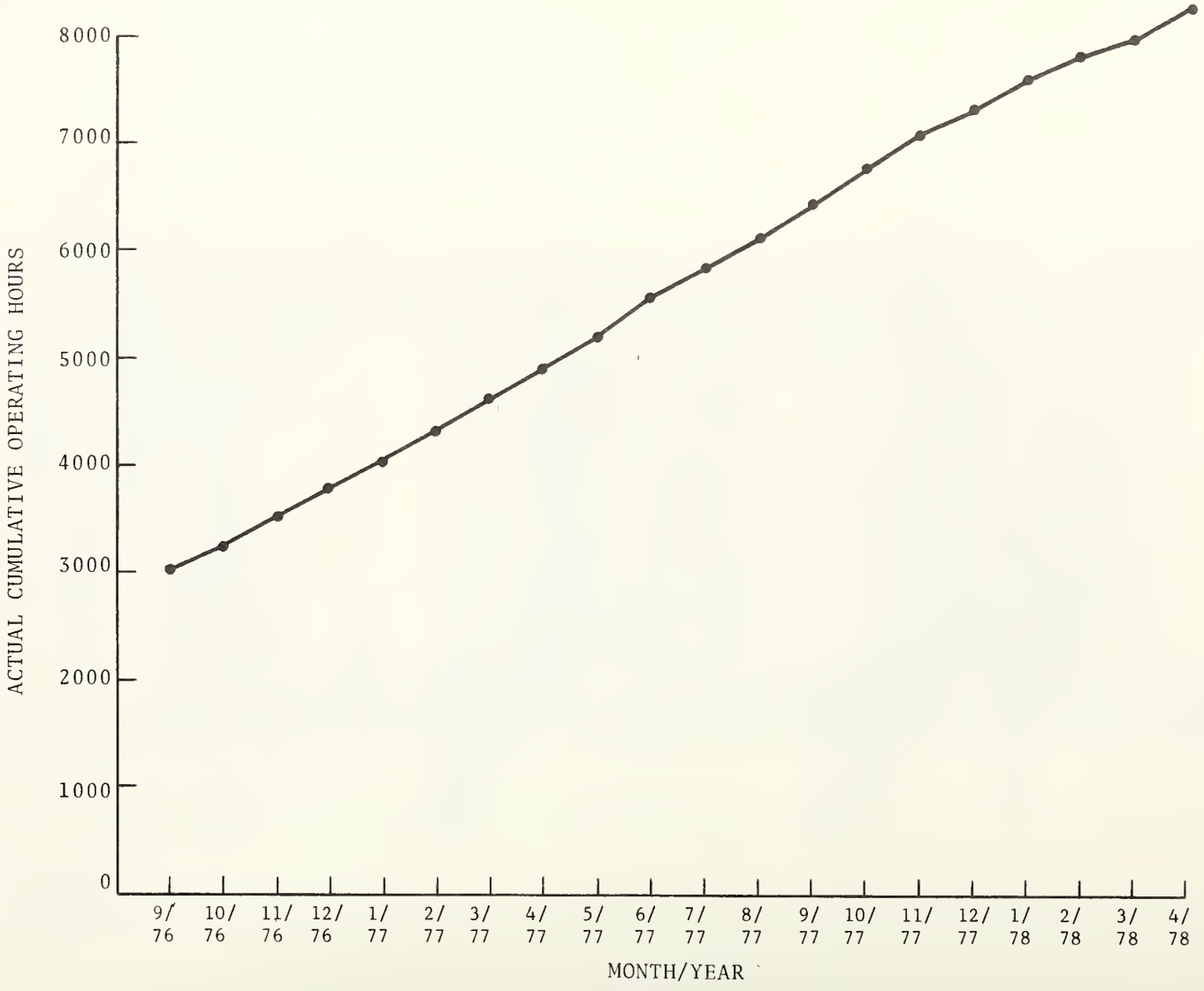


FIGURE 3-2A. ACTUAL CUMULATIVE OPERATING HOURS

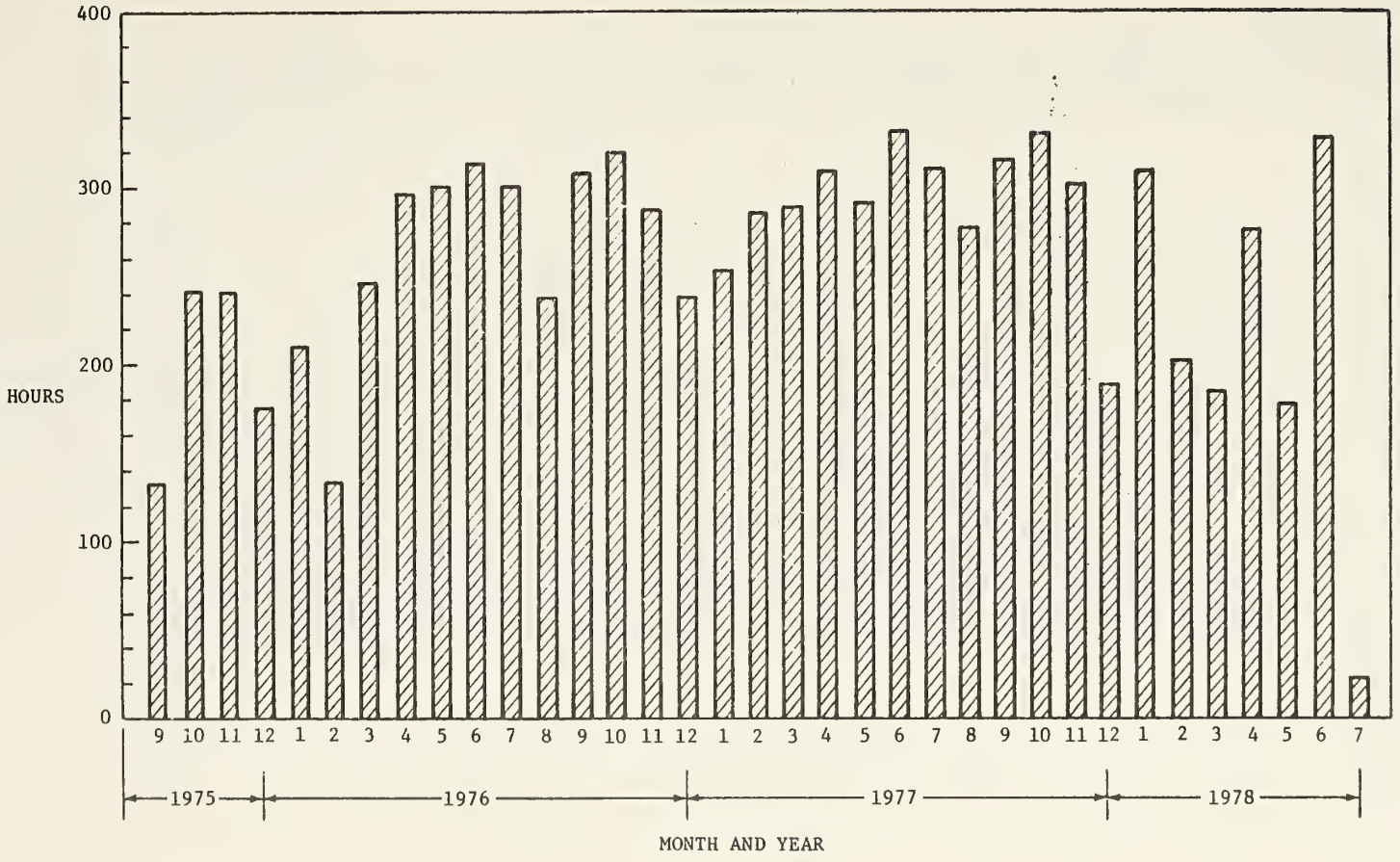


FIGURE 3-2B. MONTHLY HOURS OF OPERATION (PREPARED BY MITRE CORPORATION)

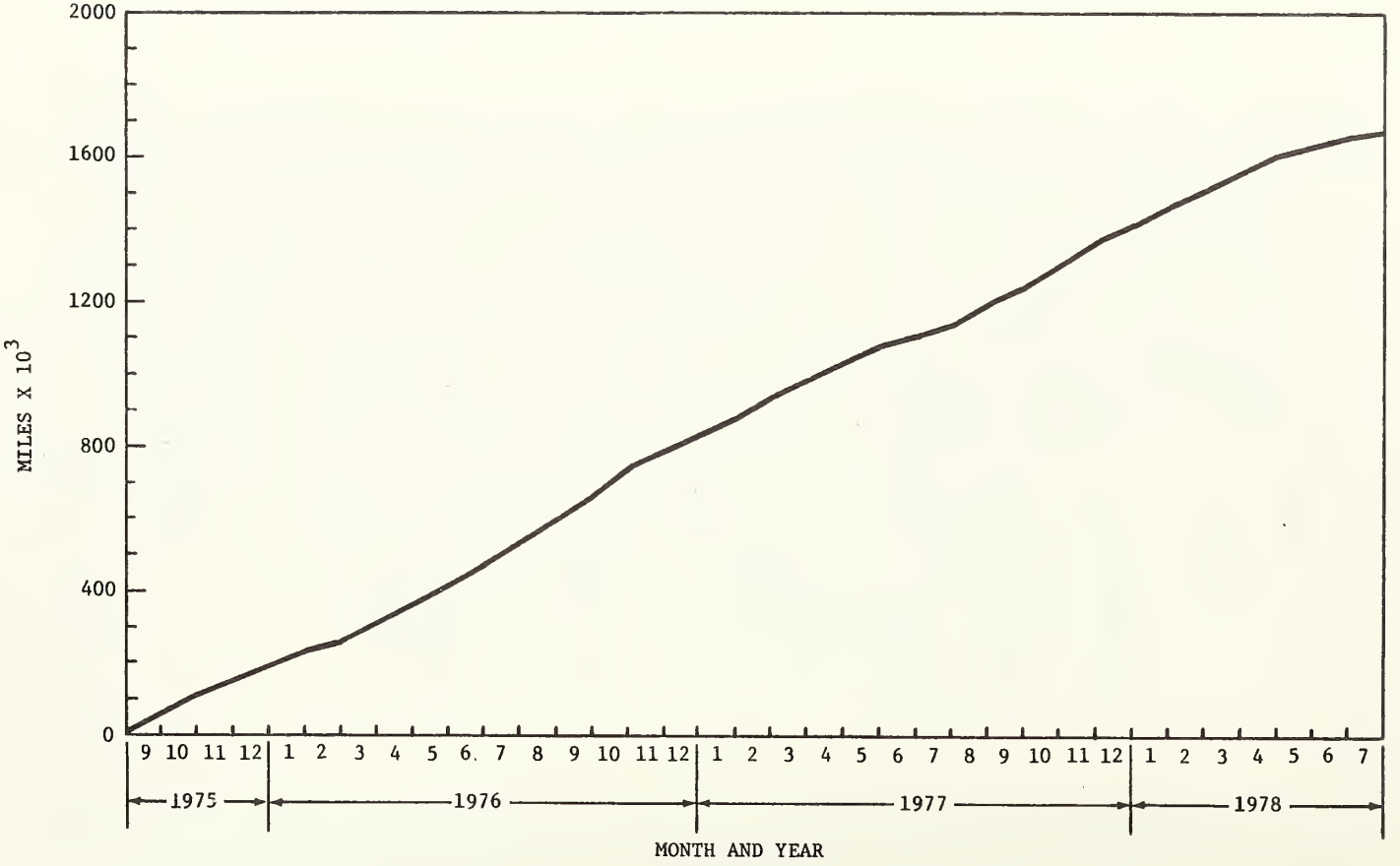


FIGURE 3-3A. CUMULATIVE FLEET MILEAGE (PREPARED BY MITRE CORPORATION)

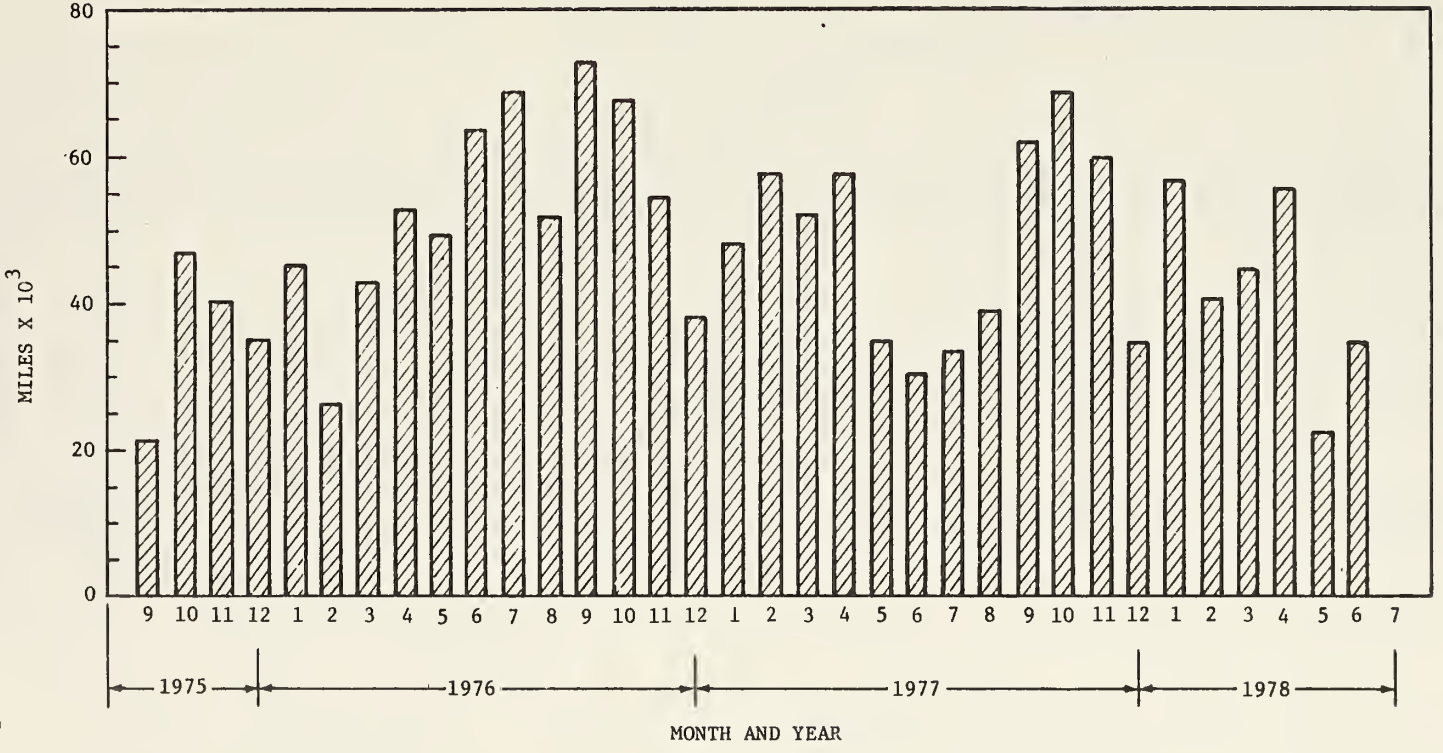


FIGURE 3-3B. MONTHLY FLEET MILEAGE (PREPARED BY MITRE CORPORATION)

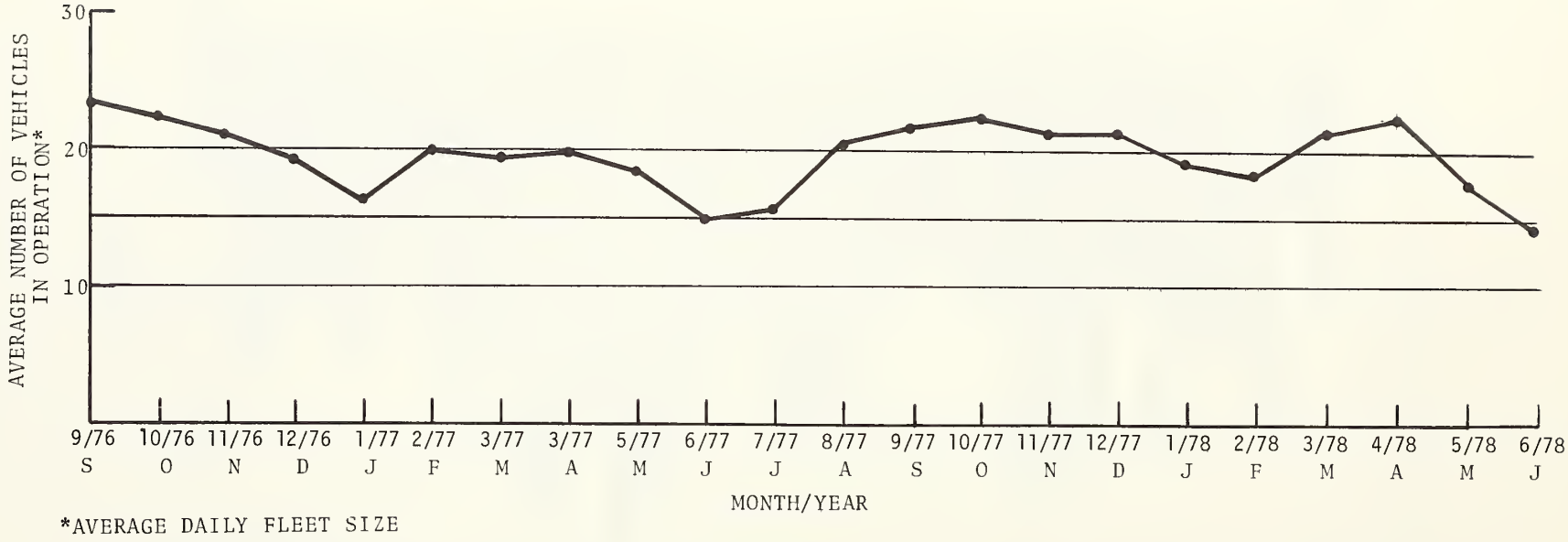


FIGURE 3-4. AVERAGE DAILY FLEET SIZE

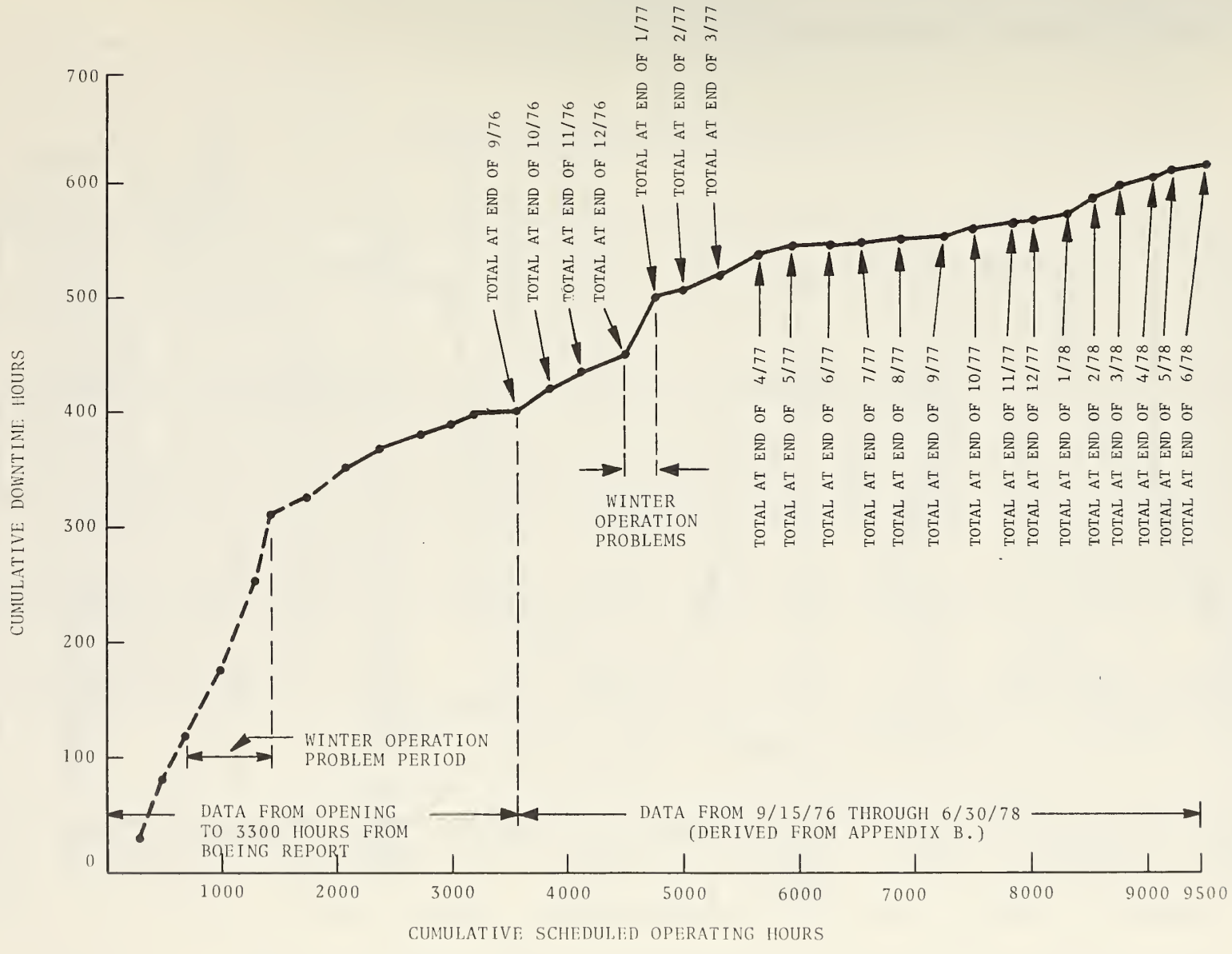


FIGURE 3-5. CUMULATIVE DOWNTIME HOURS VERSUS CUMULATIVE SCHEDULED OPERATING HOURS

TABLE 3-2. DOWNTIME EVENTS/DAY (DERIVED FROM APPENDIX C)

MO/YR	ACTUAL OP. HRS.	EVENTS	DOWN-TIME	DAYS	AVER. NO. VEH.	DOWN-TIME/ EVENT	VEH. MTBDE+	EVENTS/ DAY	SYSTEM MTBDE+
9/76	307	76	16.8 hrs.	29	24	0.22 hrs.	97 hrs.	2.6	4.04 hrs.
10/76	320.3	66	22	31	23	0.33	111.5	2.1	4.85
11/76	289.6	70	14.4	27	21	0.21	86.7	2.6	4.13
12/76	239.4	38	12.8	22	19	.34	119.7	1.5	6.3
1/77	254.8	64	55.5	30	17	.87	67.7	2.1	3.98
2/77	275.3	57	8.6	27	20	.15	96.6	2.1	4.83
3/77	290.9	53	12.4	27	19	.23	104.3	2.	5.49
4/77	308.8	24	5.7	29	20	.24	257.4	.82	12.87
5/77	293.3	19	2.9	27	18	.15	277.9	0.7	15.44
6/77	333.2	16	2.3	30	15	.14	312.3	0.53	20.82
7/77	311.2	14	2.3	30	16	.16	355.5	0.47	22.22
8/77	278.2	24	4.3	26	20	.18	213.8	0.92	11.59
9/77	317.4	41	6.9	29	22	.17	170.3	1.6	7.74
10/77	331.3	53	8.7	31	21	.16	131.3	1.7	6.25
11/77	302.5	24	5.0	27	21	.21	264.6	.89	12.6
12/77	190	22	3.5	17	21	.16	181.4	1.3	8.64
1/78	309.6	60	13.1	29	19	.22	98	2.1	5.16
2/78	201.5	41	13.2	20	19	.32	93.3	2.1	4.91
3/78	186.7	28	8.	19	21	.29	14.0	1.5	6.67
4/78	277.3	30	5.7	26	22	.19	203	1.2	9.24
5/78	179.4	13	3.1	15	17	.24	234.6	.87	13.8
6/78	329.7	13	2.6	30	14	.2	355	.43	25.36
TOTALS	6,369	846	229.9	578		.27		1.46	

+Mean time between downtime events.

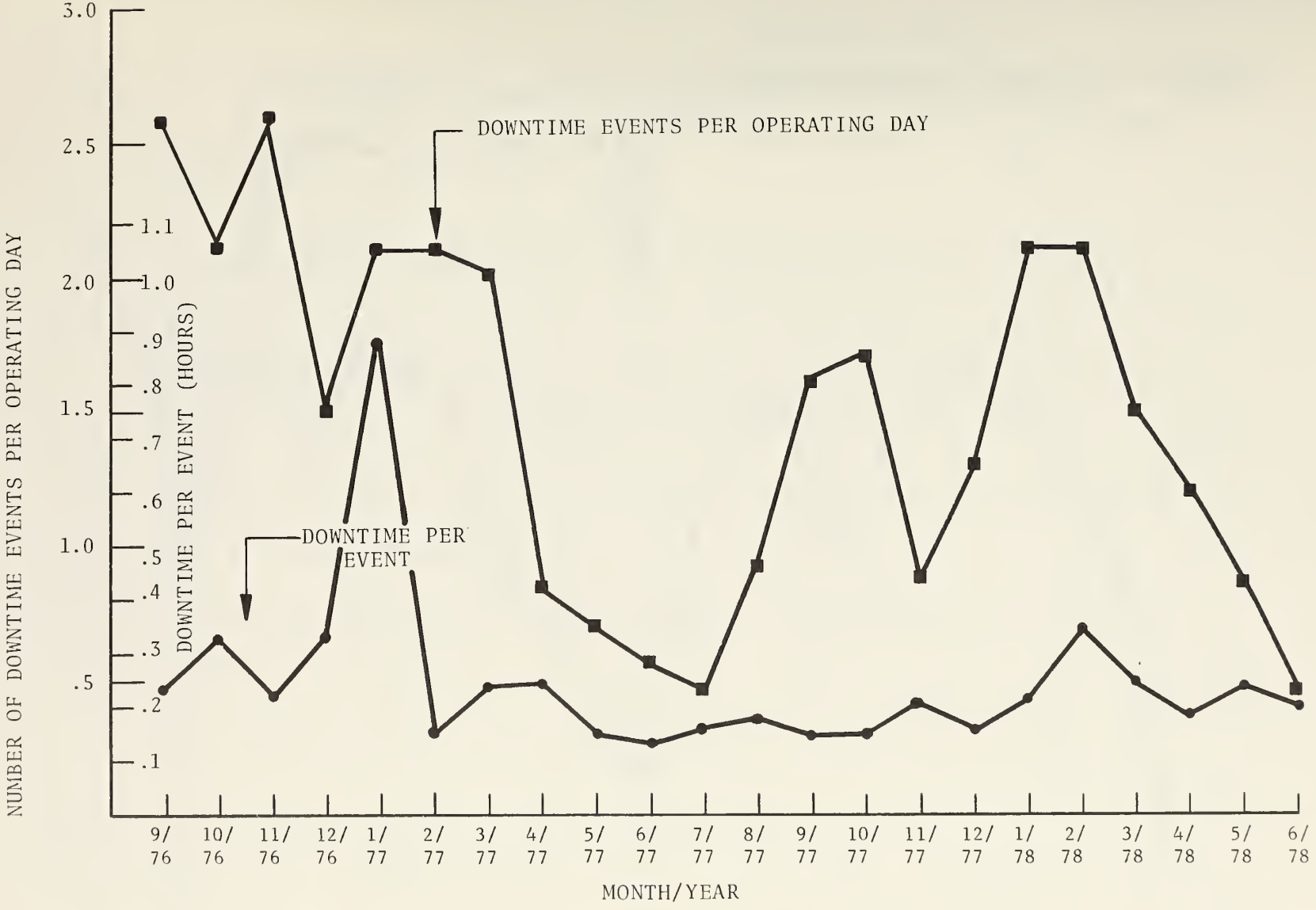


FIGURE 3-6. DOWNTIME EVENTS PER DAY AND DOWNTIME PER EVENT (FROM TABLE 3-2)

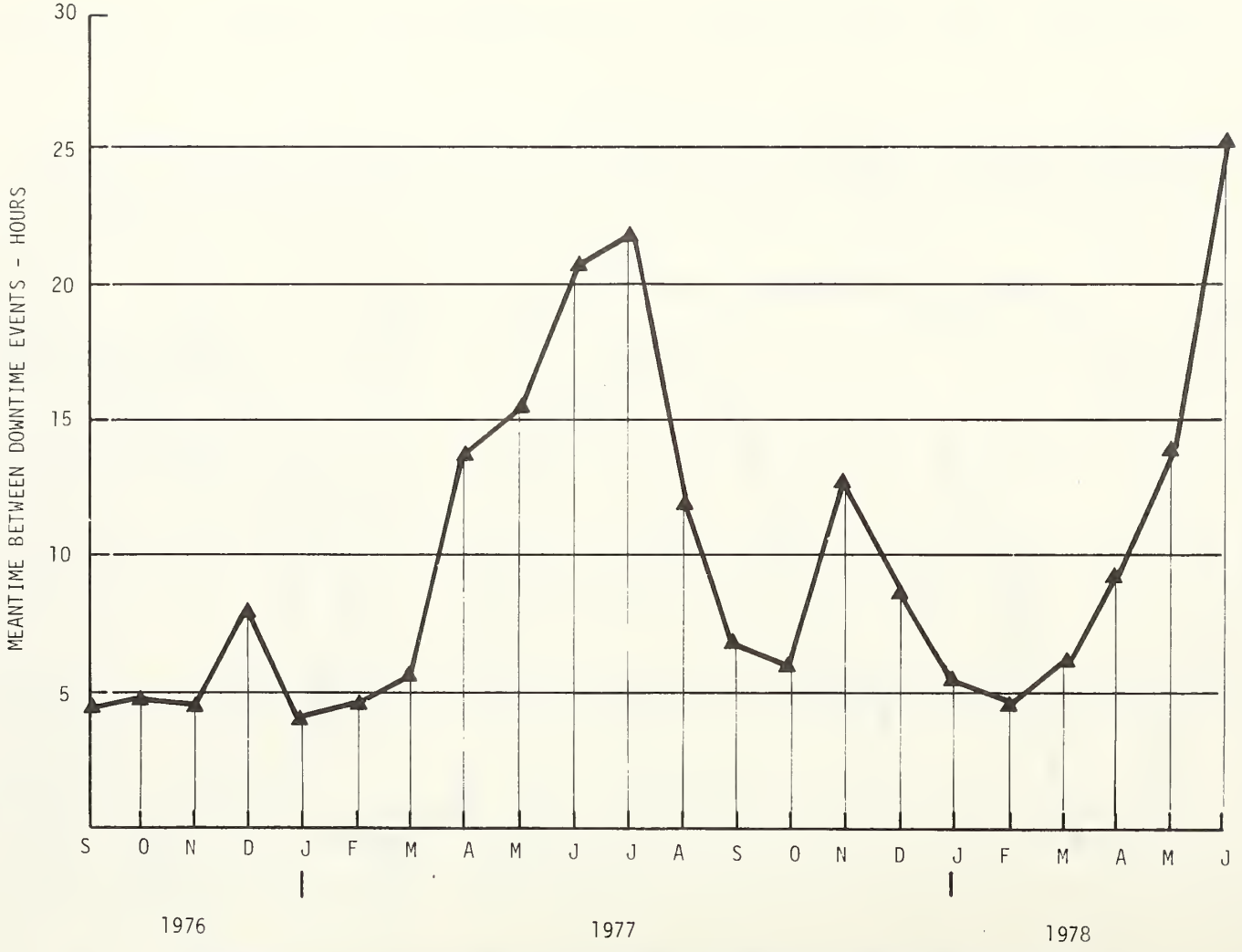


FIGURE 3-7. SYSTEM MEAN TIME BETWEEN DOWNTIME EVENTS

1. Data are calculated from Appendix B and Boeing records.
2. Data are tabulated in Table 3-2.

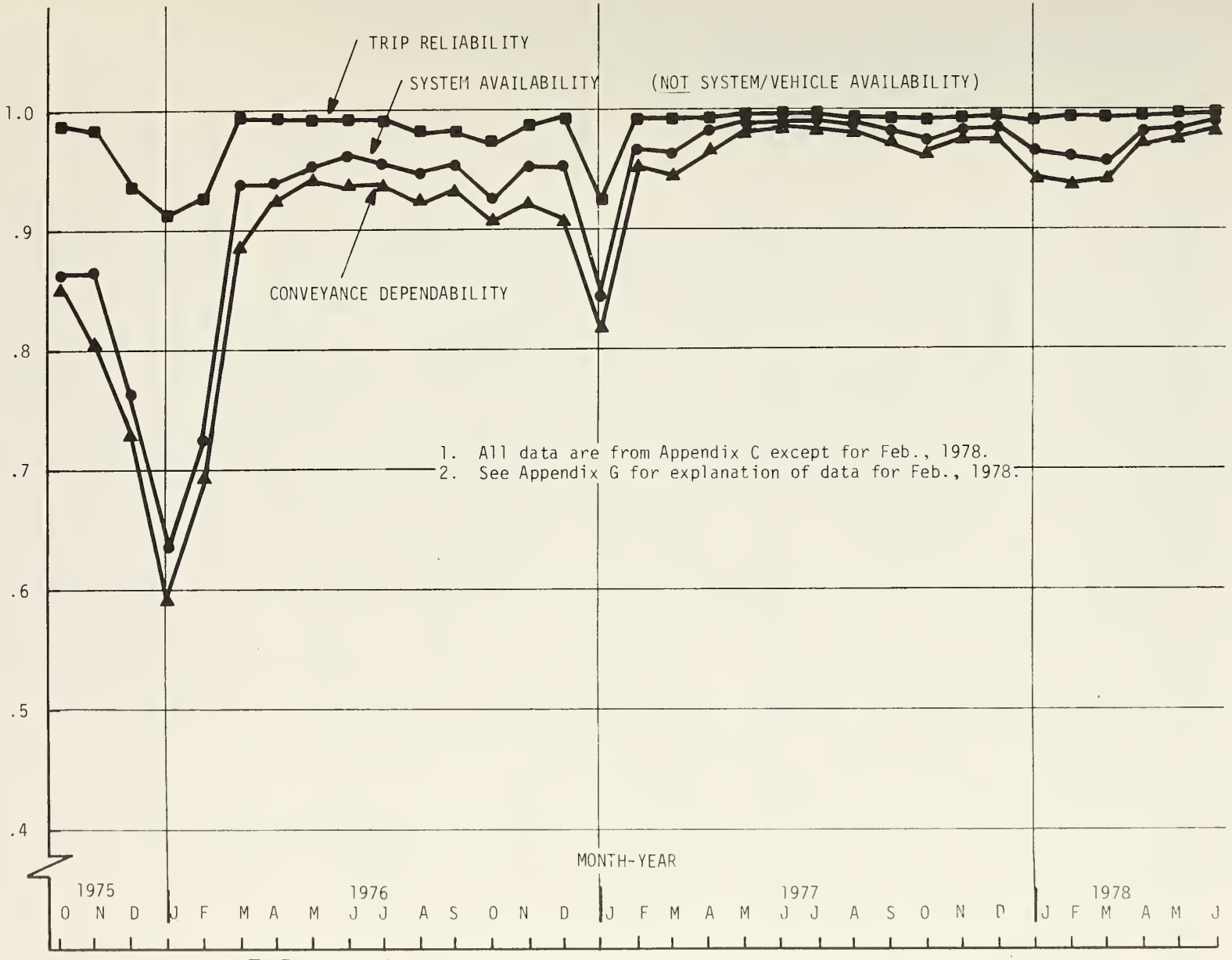


FIGURE 3-8. SYSTEM AVAILABILITY AND DEPENDABILITY

In summary, the MPM performance improved markedly. It is significant that the system continued to operate successfully through the winter of 1977-78, and during the big blizzard in late January 1978, MPM was the only transit system running in Morgantown.

4. MAINTENANCE ACTIONS

In a continuation of maintenance documentation practices begun at the initiation of MPM system operation, each maintenance action, scheduled or unscheduled, was entered as it was begun on an Equipment Status and Maintenance Record (ESMR), and a full description of the action taken was added to it as the work progressed. Monthly Failure and Maintenance reports were compiled from these individual ESMRs. (See Appendix A.) A copy of a typical ESMR is shown in Appendix E. The data reported below are all taken from these monthly Failure and Maintenance reports issued by WVU. A period of 12 months, July 1, 1977, through June 30, 1978, is covered. The data can be looked at in many ways, as will be seen. To interpret them intelligently, some further abbreviations, used frequently in the data compilations, are listed below:

SCCS: Station Control and Communications Subsystem

CCCS: Central Control and Communications Subsystem

GCCS: Guideway Control and Communications Subsystem

S+PDS: Structures and Power Distribution Subsystem

CAS: Collision Avoidance System

MOCU: Manually Operated Control Unit

ECU: Environmental Control Unit (air conditioning)

VCCS: Vehicle Control and Communication Subsystem

PCB: Printed Circuit Board.

4.1 UNSCHEDULED MAINTENANCE ACTIONS, BY MONTH

In the Boeing report, a Maintenance Action Summary was included that showed the number of maintenance actions by month for a 9-month period during 1975 and 1976. This is reproduced here from the report as Table 4-1. The corresponding monthly figures for the 1977-1978 period are shown in Table 4-2A and Table 4-2B gives the yearly totals. The figures for 1977-78 for unscheduled events are plotted in Figure 4-1 as histograms.

TABLE 4.1. TOTAL OF ALL MAINTENANCE ACTIONS, 1ST YEAR OF OPERATION (FROM BOEING REPORT)

	MONTH ENDING																					
	OCT 15 75		NOV 15 75		DEC 15 75		JAN 15 76		FEB 15 76		MAR 15 76		APRIL 15 76		MAY 15 76		JUNE 15 76		JULY 15 76		AUG 15 76		TOTAL (9 MONTH)	
SYSTEM	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED	SCHEDULED	UNSCHEDULED
VEHICLES	57	434	100	408	97	390	70	309	99	438	23	173	97	508	68	382	80	329					691	3371
SCCS/CCCS*	18	80	5	135	5	178	0	125	7	192	1	52	5	135	6	179	3	89					50	1165
SURVEILLANCE	20	8	7	7	10	9	15	6	8	5	4	4	15	11	6	3	16	6					101	59
COMPUTER	0	0	20	14	16	5	8	11	20	17	12	19	16	6	19	8	17	10					128	90
BOILER PLANT	0	1	0	5	3	7	0	3	0	6	0	0	0	0	1	7	0	1					4	30
SOFTWARE	0	1	0	15	0	0	0	19	0	47	0	0	0	8	0	34	0	3					0	127
SUPPORT EQUIPMENT	0	17	0	30	0	15	1	5	0	7	1	1	0	7	0	3	0	12					2	97
S&PDS	90	14	31	40	66	20	33	13	50	23	9	7	84	23	31	6	59	9					453	153
TOTAL	185	555	163	654	197	624	127	491	184	735	50	256	217	690	131	622	175	459					1429	5092

NO FIELD REPORT AVAILABLE

NO FIELD REPORT AVAILABLE

*Central Control

TABLE 4-2A. TOTAL OF ALL MAINTENANCE ACTIONS, LAST YEAR OF OPERATION

	JULY		AUG.		SEPT.	
	Sched.	Unsched.	Sched.	Unsched.	Sched.	Unsched.
Vehicles	45	99	56	120	115	266
Central Control	7	75	3	24	5	147
Operator Console	5	17	4	45	5	39
Computers	20	10	16	1	17	22
S & PDS	28	14	27	22	38	26
Support Eqpt.	0	6	3	2	4	16
TOTALS	105	221	109	227	184	516
	OCT.		NOV.		DEC.	
Vehicles	170	270	447	291	91	227
Central Control	14	277	14	322	2	140
Operator Console	3	45	0	51	0	35
Computers	16	9	16	9	0	3
S & PDS	36	26	0	23	7	49
Support Eqpt.	0	7	0	14	0	14
TOTALS	239	634	477	710	100	474
	JAN.		FEB.		MARCH	
Vehicles	131	301	40	204	143	339
Central Control	5	23	12	11	4	68
Operator Console	2	43	0	52	1	33
Computers	16	0	16	8	16	2
S & PDS	17	28	12	26	19	45
Support Eqpt.	0	12	4	7	2	25
TOTALS	171	407	84	308	185	512
	APR.		MAY		JUNE	
Vehicles	133	220	64	185	170	183
Central Control	20	119	21	43	8	37
Operator Console	6	19	1	28	3	18
Computers	20	16	14	2	16	6
S & PDS	72	31	65	29	25	45
Support Eqpt.	1	27	6	20	0	19
TOTALS	252	432	171	307	222	308

+Data compiled from monthly Reliability and Maintenance report summaries prepared by WVU.

TABLE 4-2B. TOTAL NUMBER OF ALL MAINTENANCE ACTIONS, JULY 1977 to JUNE 1978

	MAINTENANCE ACTIONS		
	SCHED.	UNSCHED.	TOTAL
Vehicle	1605	2705	4310
Central Control	115	1286	1401
Op. Console	30	425	455
Computers	183	88	271
S&PDS	346	364	710
Support	20	169	189
	2299	5037	7336

Summarized from the 12 monthly totals in Table 4-2A.

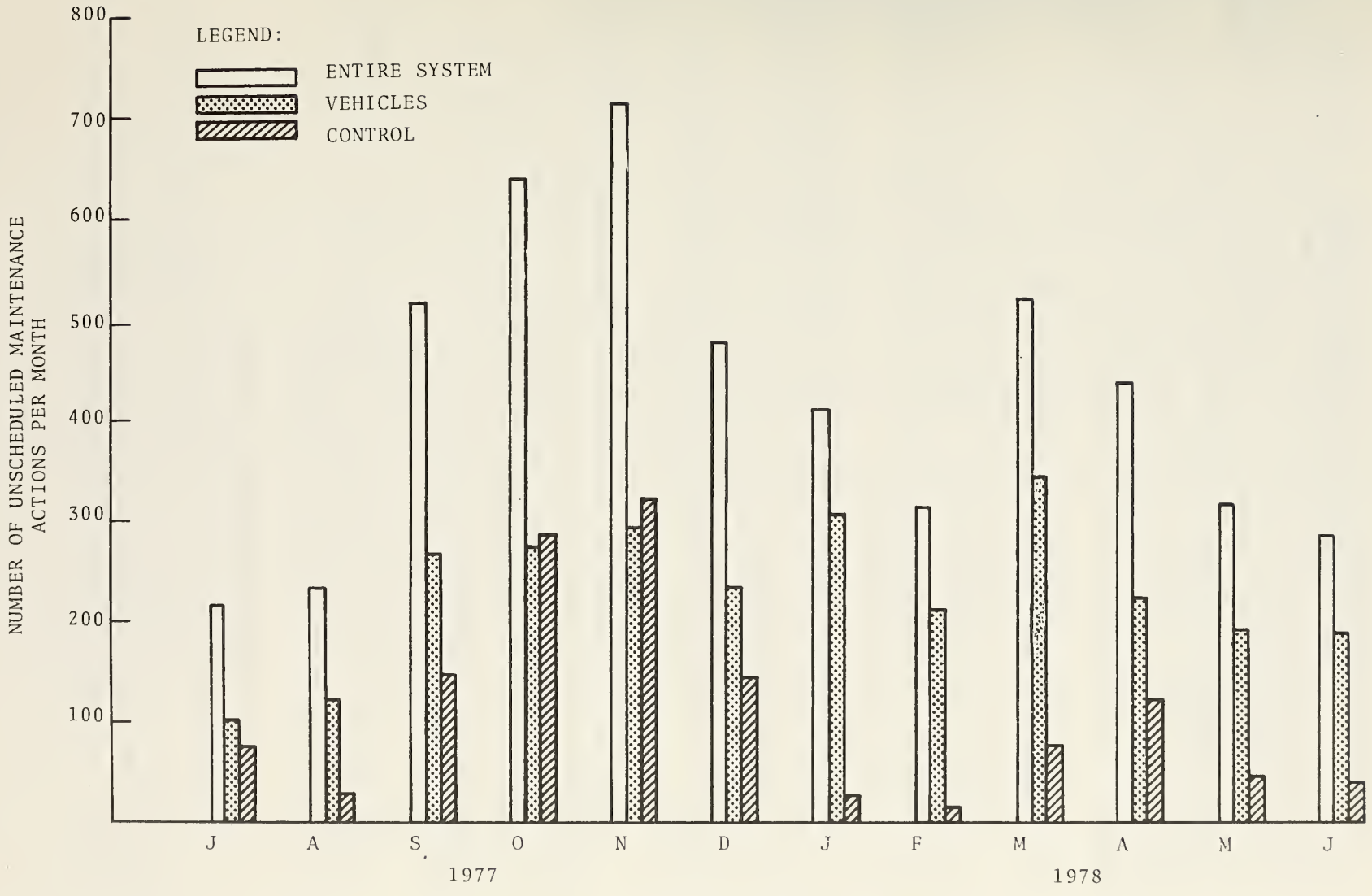


FIGURE 4-1. UNSCHEDULED MAINTENANCE ACTIONS (FROM TABLES 4-1 AND 4-2)

Table 4-3 compares unscheduled maintenance activity during the first nine months of system life (1975-76, from Table 4-1) with the activity for the same period in 1977-78 (from Table 4-2A). As the system matured, the number of unscheduled maintenance actions clearly decreased overall, although in October, November, and March of the last period, the total of maintenance actions was greater than two years previously. Scheduled maintenance work hours, however, increased from July 77 through June 78 (See Table 4-5B).

4.2 UNSCHEDULED MAINTENANCE ACTIONS, BY CAUSES

In Table 4-4 the data are summarized for the 12-month period of July 1977, through June 1978. The number of unscheduled maintenance actions and percentages due to failures, wear adjustments, etc., are separately presented.

During the year approximately 5045 unscheduled maintenance actions were performed. Of these 46.8 percent were demonstrably due to failures of equipment, 6.6 percent to excessive wear, and 12.3 percent to adjustments. In 7.1 percent of the cases no trouble was confirmed in the maintenance shop, and 27 percent were due to causes other than those listed.

As might be expected, the vehicles caused more unscheduled maintenance actions than all the other system elements combined, contributing 2729 out of 5045, or 54 percent. In the vehicle population alone 38 percent were due to failures and almost 11 percent to wear. Unconfirmed and other totalled 40 percent of vehicle unscheduled maintenance actions.

The time distribution of the maintenance actions for vehicles, control console, power distribution, computer, etc., is shown in Appendix F as derived from the WVU reports.

4.3 SCHEDULED VEHICLE MAINTENANCE ACTIONS

Table 4-5A displays the repetitive scheduled vehicle maintenance actions, by month, for the third year of Phase I operation, as derived from the 12 monthly WVU reports, of which Appendix A is an example. To understand the scheduled maintenance data included in

TABLE 4-3. TOTALS OF UNSCHEDULED MAINTENANCE ACTIONS, COMPARISON OF 1ST AND 3RD YEARS

MONTH	VEHICLES		TOTAL SYSTEM	
	1975-76*	1977-78†	1975-76*	1977-78†
OCT	434	270	555	634
NOV	408	281	654	710
DEC	390	227	624	474
JAN	309	301	491	407
FEB	438	204	735	308
MAR	173	339	256	512
APR	508	220	690	432
MAY	382	185	622	308
JUNE	329	183	459	308

*FROM TABLE 4-1
†FROM TABLE 4-2

TABLE 4-4. TOTALS OF UNSCHEDULED MAINTENANCE ACTIONS, JULY 1977 TO JUNE 1978† BY CAUSES

	FAILURES		EXCESSIVE WEAR		ADJUSTMENTS		UNCONFIRM.		OTHER		TOTAL
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.
VEHICLES	1,038	38	299	10.9	291	10.6	213	7.8	888	32.5	2,729
CENTRAL CONTROL	980	78.8	11	.8	85	6.8	70	5.6	95	7.8	1,243
OPERATOR'S CONSOLE	122	28.5	2	.5	194	45.3	27	6.3	83	19.4	428
COMPUTERS	41	48.2	4	4.7	5	5.9	17	20.	18	21.2	85
S&PDS	110	27.9	8	2.	30	7.6	17	4.3	228	58	393
SUPPORT EQPT.	71	42.	11	6.5	16	9.4	15	8.9	56	33.	169
TOTALS	2,362	46.8	335	6.6	621	12.3	359	7.1	1,368	27.1	5,045

†Data compiled from 12 monthly Reliability and Maintenance reports prepared by WVU.

TABLE 4-5A. SCHEDULED REPETITIVE VEHICLE MAINTENANCE ACTIONS AND WORKHOURS FROM SECTION E OF 12 FAILURE AND MAINTENANCE DATA REPORTS (SEE APPENDIX A FOR EXAMPLE)

	INTERVAL INSPECTIONS			INSPECTIONS BY ACCUMULATED MILES		
MONTH	NUMBERS OF INTERVAL INSPECTIONS*	TOTAL WORKHOURS	WORKHOURS PER INSPECTION	NUMBER OF INSPECTIONS BY ACCUMULATED MILES**	TOTAL WORKHOURS	WORKHOURS PER INSPECTION
JULY	29	14.5	.5	10	127.6	12.8
AUG	40	32.6	.82	12	123.5	10.3
SEPT	34	17.0	.5	9	142.9	15.9
OCT	79	31.2	.4	24	440	18.3
NOV	119	69.3	.58	20	338.1	16.9
DEC	52	26.3	.51	7	150.4	21.5
JAN	101	63.5	.63	17	324.3	19.1
FEB	31	18.6	.6	6	259.9	52
MAR	91	51.2	.56	17	341	20.1
APR	105 + 11	60.2	.57	13	246.4	19
MAY	54	25.8	.47	10	162.7	16.3
JUNE	116	57.4	.49	13	264	20.3
TOTALS	851	466.8	avg. .55 hr.	158	2920	avg. 20.2 hrs.

* Interval inspections are made every 187.5 and 750 miles.
** Mileage inspections are made on each vehicle every 3000 miles.
For totals of scheduled repetitive maintenance actions and workhours, see Table 4-5B.

TABLE 4-5B. TOTAL SCHEDULED VEHICLE MAINTENANCE ACTIONS AND WORKHOURS (REPETITIVE PLUS ONE-TIME PLANNED)

MONTH	TOTAL SCHEDULED REPETITIVE MAINT. ACT.	TOTAL REPETI-TIVE WKHRS.	PLANNED ONE-TIME SCHED. MAINT.					TOTAL MAINT. ACT.	TOTAL WKHRS.
			IMI	TIS	ECP	TOTAL ONE-TIME ACT.	TOTAL ONE-TIME WKHRS.		
JULY 77	39	142.1	3	16	0	19	(240)	58	(382)
AUG. 77	52	156.1	0	2	1	3	(240)	55	(396)
SEPT. 77	43	159.9	53	6	0	59	76	102	236
OCT. 77	103	471.2	59	5	0	64	112	167	583
NOV. 77	139	407.4	307	2	0	309	537	448	944
DEC. 77	59	176.7	32	0	0	32	10	91	187
JAN. 78	118	387.8	13	4	2	19	29	137	417
FEB. 78	37	278.5	1	2	0	3	5	40	283
MAR. 78	108	392.4	33	2	1	36	34	144	426
APR. 78	129	306.6	7	0	0	7	37	136	344
MAY 78	64	188.5	0	0	0	0	0	64	189
JUNE 78	129	321.4	33	0	7	40	(23)	169	344
TOTALS	1020	3388.6	541	39	11	591	1343	1611	4732

() = Estimated by averaging adjacent months.
IMI = Interim maintenance instruction.
TIS = Test information sheets
ECP = Engineering change proposals

these reports requires a brief explanation of the Morgantown maintenance process.

a. By definition, scheduled vehicle maintenance includes all regular interval inspections, done on each vehicle every 375 and 750 miles of its life, (and during some time periods, every 187.5 miles).

b. In also includes all periodic maintenance done on each vehicle for every 3000 miles that it accumulates.

These numbers were summarized in Section E of the monthly reports, and the totals for the 12 months appear in Table 4-5A of this report, which also includes the associated maintenance workhours and workhours per maintenance actions. 851 interval inspections were done during the year for which these reports were compiled, averaging .55 hours each. 158 accumulated miles checks were done, averaging 20.2 hours each for the year. A total of 1020 repetitive scheduled maintenance actions were taken, totaling 3388 workhours.

c. In addition, any planned actions on the vehicles - changes, special tests, or other planned actions - are included in the overall totals of scheduled maintenance actions, summarized on the first page of the monthly reports. These planned one-time special actions are identified as "Interim Maintenance Instructions" (IMI), "Test Information Sheets" (TIS), and "Engineering Change Proposals" (ECP). There were 541 IMI's, 39 TIS's, and 11 ECP's performed during the year. These are displayed in Table 4-5B of this report. When the total of these, 591, is added to the above totals of the repetitive maintenance actions, the total scheduled maintenance actions for the year is obtained, which amounts to about 1611 scheduled maintenance actions, requiring over 4700 workhours of effort to complete.

4.4 SUMMARY OF DOWNTIME EVENTS

Table 4-6 summarizes for the year July, 1977 - June, 1978 the incidence of events that caused downtime in all or portions of the system. "Number of downtime events" and "total downtime" were ob-

TABLE 4-6. SUMMARY OF INCIDENCE OF UNSCHEDULED DOWNTIME EVENTS, FROM MONTHLY FAILURE AND MAINTENANCE REPORTS*

MONTH	(1) NUMBER OF DOWNTIME EVENTS	TOTAL (1) DOWNTIME (MIN)	(2) RESULTING MAINTENANCE WORK HOURS	DOWNTIME PER EVENT (MIN)	MWH PER EVENT (HRS)
JULY 1977	14	138	48.7	9.86	3.47
AUG.	24	258	52.4	10.75	2.18
SEPT.	41	414	105.2	10.09	2.56
OCT.	53	522	172.6	9.85	3.26
NOV.	24	300	47	12.5	1.96
DEC.	22	210	57.7	9.55	2.62
JAN. 1978	60	786	152	13.1	2.53
FEB.	41	792	113.9	19.3	2.77
MAR.	28	480	124	17.4	4.43
APR.	30	342	83.8	11.4	2.79
MAY	13	186	86.2	14.3	6.63
JUNE	13	156	26.9	12	2.07
TOTALS	363	4584 MIN	1070.4 HRS	(3) Avg 12.6 MIN	(3) 2.95 HRS

(1) Data derived from Appendix C
(2) Data derived from 12 monthly R&M Reports from WVU
(3) Average of totals in this row.

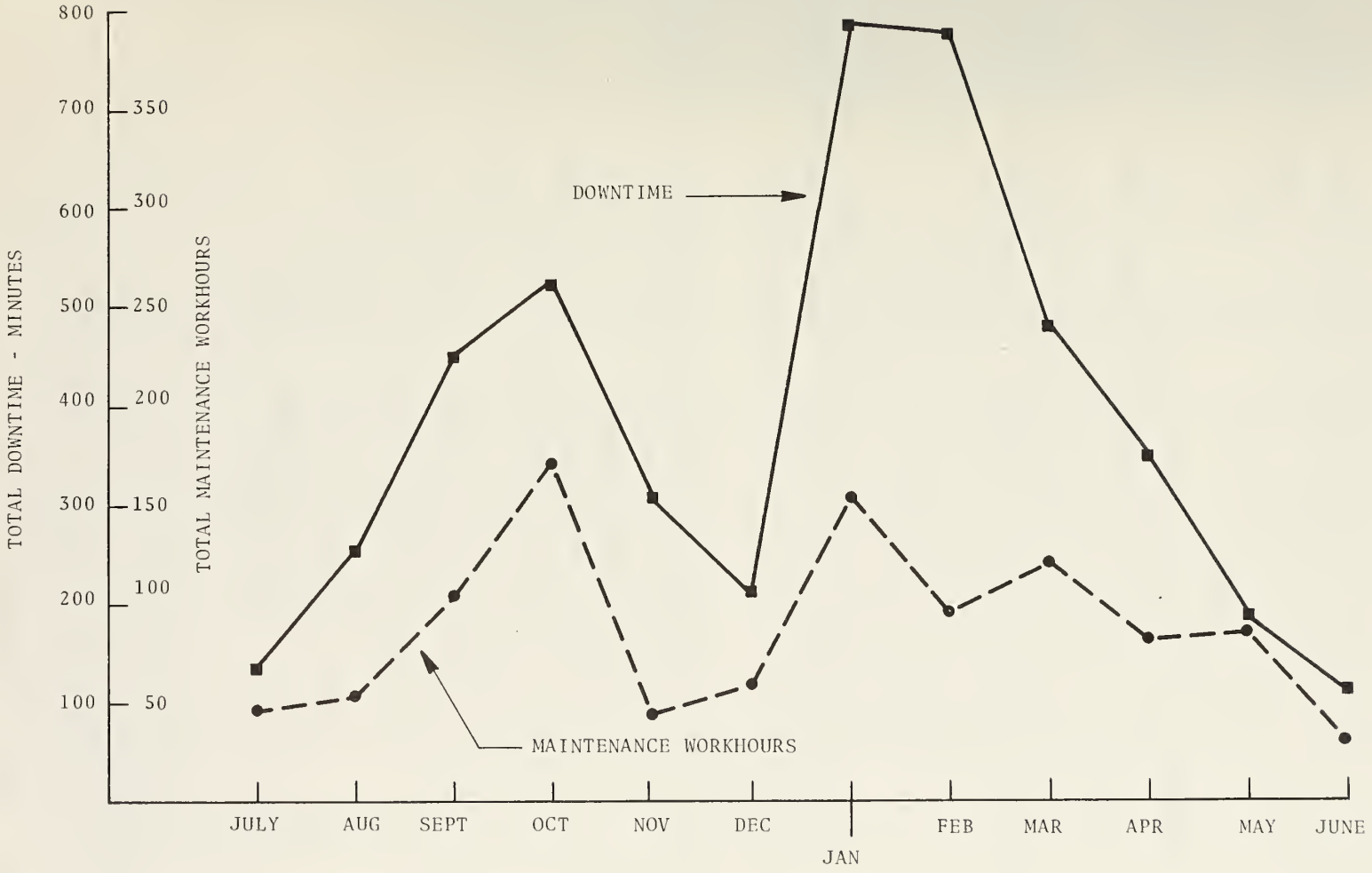


FIGURE 4-2. MONTHLY DOWNTIME AND RESULTING MAINTENANCE TIME SUMMARY (PLOTTED FROM TABLE 4-6)

tained from Appendix C, for it is the most accurate data base available. "Resulting maintenance workhours" were totalled from the 12 monthly WVU reports, described above. The last two columns were calculated by dividing the total downtime and total maintenance workhours by total downtime events.

In Table 4-6, Appendix C and the 12 monthly reports tell us that a total of 69 different components, system conditions, and system elements generated 363 downtime events during the year. These resulted in 4584 minutes of downtime (76.6 hours). The 12 monthly reports further show that 1070.4 workhours of unscheduled maintenance time was generated, an average of 12.63 minutes of downtime per event, and 2.95 maintenance workhours per event. Downtime per month and maintenance workhours per month are plotted in Figure 4-3. Note that the totals of downtime events and downtime are the same in both sources - within a small error - although they were obtained differently, a fact that gives some confidence in their validity.

Table 4-7 presents the 69 causes of downtime for the same time period, derived entirely from the 12 monthly reports. It includes the annual sum of events, downtime caused, maintenance workhours (MWH) total used, downtime per event, and MWH per event. They are ranked by the number of downtime events they caused.

The first 17 causes in frequency of occurrence (24.6 percent) accounted for 66.5 percent of all downtime events. Of these, unconfirmed or unidentified causes accounted for 13.25 percent of the total, or 48 events. From the table it can be determined that external causes - ice on guideway, dog on guideway, passenger-induced operator error, vehicle reassigned, station overfill, electrical storm - accounted for about 46 events, or 13 percent of the total.

4.5 MAINTENANCE WORKHOURS

The numbers of all events that have taken maintenance time have been discussed in the previous sections. Table 4-8 summarizes the maintenance work hours associated with each kind of event:

TABLE 4-7. CAUSES OF DOWNTIME EVENTS, FROM MONTHLY FAILURE AND MAINTENANCE REPORTS

Rank by Number of Events	Annual Total Downtime Events	Annual Total Downtime Minutes	Annual Total Maintenance Workhours	Downtime per event (Mean Time to Restore)	MWH per Event (Mean Time to Repair)	Percent of Total Downtime
Unconfirmed or not duplicated	50	573	31.5	11.5	.62	12.2
Brakes	40	332	184.3	8.3	4.6	7.2
VCCS	22	193	83.6	9.2	4.	4.2
Switch Verify	13	105	36	8	2.8	2.3
Power Collect	13	139	53.3	10.7	2.8	2.8
A2 Module	12	139	80.5	11.6	6.7	3.0
CAS	12	311	25.2	25.2	1.45	6.4
Ice on Guideway	11	295	11.4	26.8	1.	6.4
Presence Detector	10	114	63	11.4	6.3	2.5
SCCS	10	207	24.5	21	2.45	4.5
Vehicle Reassignment	9	84	1.6	9.3	.18	1.8
Height Control Valve	8	72	30.8	9.	3.8	1.6
Station Overfill	7	30	.5	3.3	.06	.7
Dog on Guideway	7	82	6.2	12.	0	1.8
Compressor	7	60	25	8.6	3.6	1.3
Door	7	59	13.6	8.4	1.9	1.3
Corroded/Broken Wires	7	70	21.6	10.	3.1	1.5
Block Control PCB	6	36	26.5	6.	4.4	.8
Transmit Antenna	6	52	24	8.7	3.	1.1
Passenger Induced	6	40	1.8	6.7	.3	.9
Circuit Breaker Tripped or Failed	6	116	14.2	19.3	2.4	2.5
Bias Hose	6	116	12.6	19.3	2.1	2.5
P.V. Pump	4	48	18.2	12.	4.5	.9
High Speed Enable Switch/Relay	4	40	5.2	5.	1.3	.9
A1 Module	4	129	24	32.2	6.	2.8
Agastat	4	27	6.6	8.3	2.	.5
Hydraulic Line	3	69	7.5	23	2.5	1.5
Guide Axle	3	38	6.7	13.	2.2	.8
Power Rail	3	77	15	25.7	5.	1.7
Speed Tone Generator	3	15	2	5.	.67	.3
Human Error	3	12	0	4.	0	.3
Still Open	3	23	0	7.7	0	.5
Receive Antenna	2	22	1.5	11.	.75	.5
FSK Loop	2	117	13	59	6.5	2.5
UPS Inverter	2	55	31.2	27.5	15.6	1.2
Vehicle Batteries Supply	2	12	3.2	6.	1.6	.3
Guideway Obstruction	2	24	7.2	12	3.6	.5
Accumulator Low	2	19	2.3	9.5	1.2	.4
Failed to Restart	1	17	3.	13	1.75	.4
Tachometer PCB	1	8	3.	8.	3.	.2

TABLE 4-7. CAUSES OF DOWNTIME EVENTS, FROM MONTHLY FAILURE AND MAINTENANCE REPORTS (CONTINUED)*

Rank by Number of Events	Total Downtime Events	Total Downtime Minutes	Total Maintenance Workhours	Downtime per Event (Mean Time to Restore)	MWH per Event (Mean Time to Repair)	Percent of Total Downtime
Software Disk	2	266	0	13.3	0	5.8
SERVO Valve	2	15	15.5	7.5	7.75	.3
BIAS Reed Switch	2	11	2.6	5.5	1.3	.3
Station DHU PCB	2	21	28.	10.5	14.	.5
Safetone Loop	2	4	16.	2.	8.	.1
Power Down to Check Guideway	2	30	.5	15.	.25	.6
Pneumatic Line Leak	1	4	.5	4.	.5	.1
Air Service Valve	1	17	6.	17.	6.	.4
Popped Rear Window	1	8	.3	8.	.3	.2
Vehicle MOCU	1	7	0	7.	0	.2
Rusted Microswitch	1	6	4.	6.	4.	.2
No Fault Found	1	13	0	13.	0	.3
Guidewheel	1	13	3.	13.	3.	.3
Bias Acnator	1	20	2.	20.	2.	.4
Vehicle Levelling	1	12	1.	12.	1.	.3
Vehicle Elec. Barrier Strip	1	3	1.5	3.	1.5	.1
Guideway Loop Replacement	1	3	17.5	3.	17.5	.1
Bias Switch Bypass	1	14	1.5	14.	1.5	.3
Power Solenoid Valve	1	12	1.3	12.	1.3	.3
Preload Cylinder	1	9	5.5	9.	5.5	.2
DHU Buffer Card	1	40	5	40.	5.	.9
Flat Tires	1	22	2.3	22.	2.3	.4
Shorted Thermostat	1	18	0	18.	0	.4
Propulsion Contactor	1	8	15.	8.	15.	.2
S6 Switch	1	2	2.	2.	2.	.1
Bias Switch Cylinder	1	18	10.5	18	10.5	.4
PCB Connector	1	3	4.	3.	4.	.1
Relay Heater	1	4	2.5	4.	2.5	.1
Electrical Storm	1	11	1.0	11.	1.0	.3
Hardware And Software Reset	1	5	0	5.	1.3	.1
Totals	362	4596 (76.6 hrs)	1070 hrs	12.70 min. (0.21 hr)	Avg. 2.96 hrs	

NOTE: 1. Total listed causes = 69.
2. 17 causes (24.6%) caused 241 (68.7%) of downtime events.
3. 17 causes (24.6%) caused 2825 (61.3%) of downtime.
4. 17 causes (24.6%) caused 651.6 (61%) of maintenance workhours.
5. Period covered was July 1977-June 1978.

*Data compiled from 12 monthly Reliability and Maintenance reports prepared by WVU.

TABLE 4-8 SUMMARY OF MAINTENANCE WORKHOURS

Month	Maint. Workhours, Unsched. Downtime Events	Maint. Workhours, Unsched. Non-Down-time Events	Maint. Workhours, Vehicle Sched. Maint.	Maint. Workhours, Total
July, 77	48.7	300	142.1	490
Aug., 77	52.4	267	156.1	483
Sept. 77	105.2	562	159.9	827
Oct. 77	173	601	471.2	1245
Nov. 77	47	655	407.4	1109
Dec. 77	58	862	176.7	1097
Jan., 78	152	858	387.8	1406
Feb., 78	113.9	641	278.5	1013
Mar., 78	124	1285	392.4	1801
Apr., 78	83.8	1274	306.6	1664
May, 78	86.2	1584	188.5	1859
June, 78	26.9	1119	321.4	1467
	1071	10,008	3389	14,461
	From Table 4-6	From Section F. of Monthly WVU Reports	From Table 4-5	This total is low, for data on scheduled maintenance for other than vehicles is not available.

unscheduled events causing downtime, unscheduled events not stopping system but generating shop time, and scheduled maintenance time. Hours of unscheduled events not causing downtime are derived from section F of the 12 monthly reports, of which Page A-14 of Appendix A is a sample; maintenance workhours associated with downtime events are derived from summaries in the 12 reports of which Page A-3 of Appendix A is a sample; and scheduled maintenance workhours are derived from Section E of the 12 reports, of which Page A-13 of Appendix A is a sample.

On an annual basis less than 8% of the total maintenance effort was expended in handling downtime events; about 70% of the total was needed for correction of unscheduled events that did not cause downtime; and close to 24% of the total maintenance load was due to scheduled maintenance. Figure 4-3 presents the record of the system month by month.

It is interesting to note that although the system MTBDE has risen over the year (see Fig. 3-7) from 5 to 25 hrs, this was at the cost of many more maintenance work hours. Total work hours in June 1978 were 3 times as great as in July, 1977.

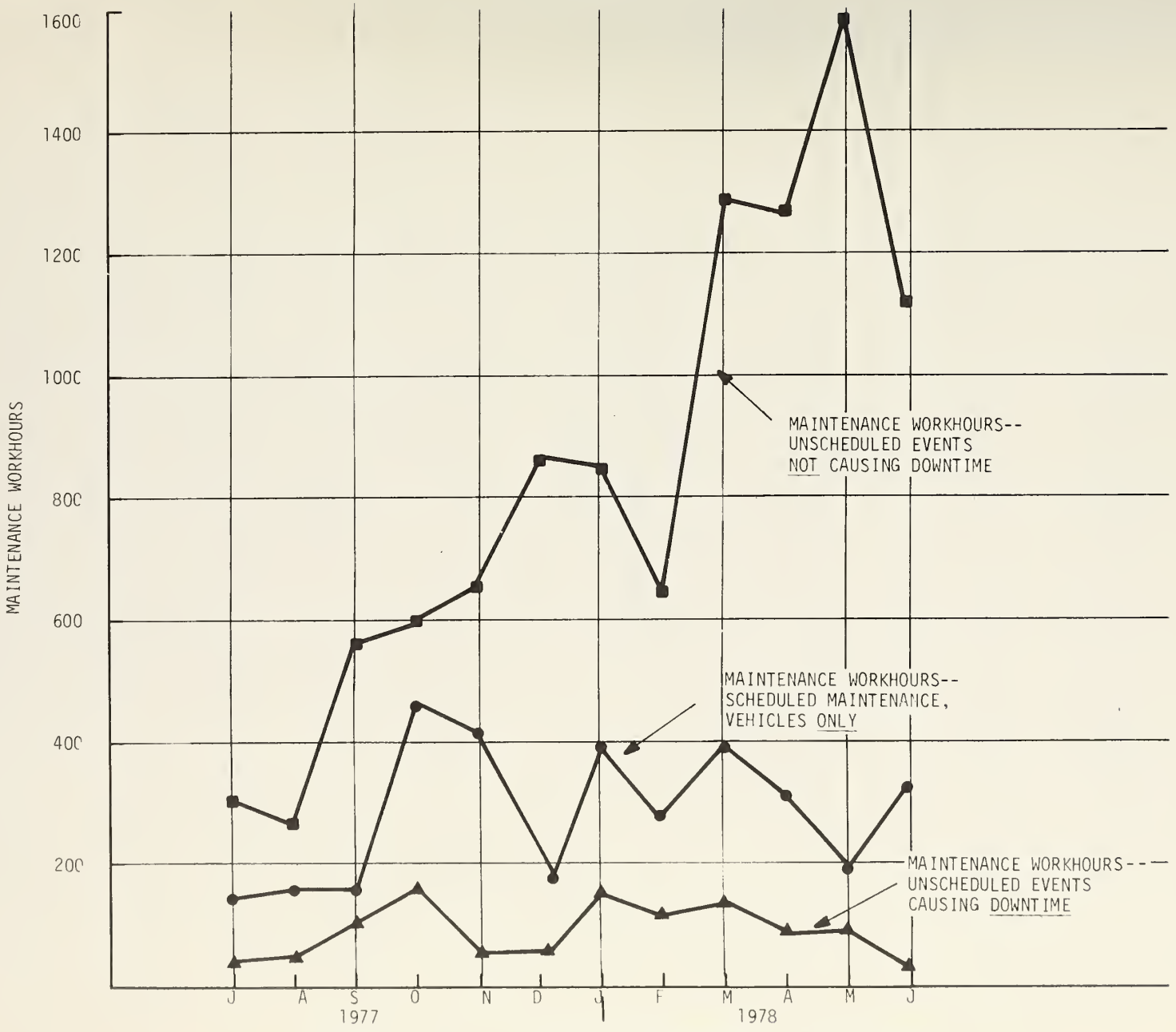


FIGURE 4-3. SYSTEM MAINTENANCE WORKHOURS

APPENDIX A:

TYPICAL MPM MONTHLY REPORT

FROM WVU

West Virginia University
MORGANTOWN, WEST VIRGINIA 26506

Personal Rapid Transit System

MORGANTOWN PRT

Monthly Failure and Maintenance Report
April 1, 1978 Through April 30, 1978

Prepared by Eric F. deGruyter

Prepared by Philip J. Dorsey

Approved by David L. Lee 5/31/78

Approved by Robert J. Bates

West Virginia University | MORGANTOWN, WEST VIRGINIA 26506

Personal Rapid Transit System

Failure and Maintenance Data Report

April 1, 1978 - April 30, 1978

All Equipment Status and Maintenance Records closed during the month of April, 1978, have been reviewed and categorized and the data from these records included in this report.

In summary:

684 Maintenance Actions were completed during this period in the following categories:

	Scheduled	Unscheduled	Total
Vehicle	133	220	353
*SCCS/CCCS/GCCS	20	119	139
Operator Console	6	19	25
Computers	20	16	36
S & PDS	72	31	103
Support Equipment	1	27	28
Totals	252	432	684

Of the 432 unscheduled maintenance actions, 39.38% resulted from failure, 3.09% from excessive wear, 14.38% from adjustment, 10.18% from unconfirmed conditions, and 32.96% from other conditions.

There was a total of 522 ESMR's opened during the period involving unscheduled maintenance activities and 385 were closed. There were also 65 ESMR's closed which had been opened in previous periods.

Scheduled maintenance on vehicles involved opening 127 ESMR's of which 124 were closed. There were also 2 ESMR's closed which had been opened in previous periods. These figures include 7 IMI's involving 37 manhours.

70 ESMR's were opened for station scheduled maintenance and 31 of those were closed. There were also 66 ESMR's closed which had been opened in previous periods.

*Excluding 89 trapped multi-fare cards from this category, the remaining Maintenance Actions resulted from the following: 24.52% from failure, 3.86% from excessive wear, 17.91% from adjustments, 12.67% from unconfirmed conditions, and 41.05% from other conditions.

This report contains the following sections:

Section A Downtime Events Summary

Each downtime event during the month is listed and includes the data, the discrepancy, the corrective action taken, repairs required, minutes of downtime and manhours required to correct the problem. Also included is a downtime summary showing the number of occurrences and percentage of total downtime in various categories.

Section B Vehicle Mileage and Maintenance Summary

This is a listing by vehicle number of total miles accumulated by each vehicle as of the end of this report period, vehicle miles operated during this report period, and scheduled and unscheduled maintenance actions performed on each vehicle during the period. Included and flagged in this list are the 15 vehicles currently in Seattle.

Section C Failure & Maintenance Summary by Subsystem

This is a listing of each subsystem and its related code. The total number of unscheduled maintenance actions completed in each category is given and then broken down into the specific types of discrepancies. Totals are given for each major system and percentages are shown for the specific discrepancies.

Section D Top Ten Problem Subsystems

This is a list of the ten subsystems requiring maintenance most frequently. A short explanation of the types of problems found is given.

Section E Vehicle Scheduled Maintenance Summary

This section consists of a listing of the number of scheduled maintenance actions performed at specific mileage intervals. Also included are the manhours required at each of the intervals and the average manhours per inspection.

Section F Unscheduled Maintenance Summary

All ESMR's closed during the month have been categorized into specific subsystems. These Maintenance Actions are listed along with associated downtimes and manhours expended. Bar charts summarizing these problem areas in relation to maintenance manhours, downtime, and number of occurrences will be provided at 3-month intervals. These charts reflect problem areas only; i.e., they do not include blanket ESMR's for miscellaneous system support.

Section G Spare Parts Usage

Consists of a parts list sorted alpha-numerically and including the part number, nomenclature, and quantity used.

Downtime Events Summary

April 1 - April 30, 1978

There were 30 downtime events during the month involving 342 minutes of downtime for an average of 11.4 minutes per event. Approximately 83.8 manhours were required to investigate and/or correct the problems for an average of 2.79 manhours per event.

		Number of Events	D/T	M/H	% of Total Downtime
1.	Unconfirmed	4	49	2.5	14.35%
2.	Hydraulic line leaks	2	41	4.5	11.98%
3.	Aft bias hose leaks	2	36	7.1	10.5 %
4.	A-1 Module failure	1	32	6.5	9.4 %
5.	A-1 Module failure } 1 event	1	30	3.0	8.8 %
6.	K-7 Relay Contacts }		30	9.5	8.8 %
7.	Wiring burnt @ Hyd. motor J-Box	1	28	8.4	8.3 %
8.	Block Control Card	4	25	18.5	7.31%
9.	HW & SW reset (CAS disparity)	3	22	1.0	6.43%
10.	G/axle fork binding	1	10	2.1	2.9 %
11.	Brake Fade	1	9	10.5	2.6 %
12.	Broken wire @ Rx Antenna	1	8	4.0	2.3 %
13.	Station overfill	4	6	--	1.75%
14.	Vehicle batteries low	1	4	.7	1.17%
15.	Relay Heater failure	1	4	2.5	1.17%
16.	Dog on guideway	1	4	0	1.17%
17.	A-2 Module failure	1	4	3.0	1.17%
	Totals	30	342	83.8	100%

Downtime Events

April 1 - April 30, 1978

Date	Down Time	ESMR #	Cause	Corrective Action	Maintenance Action	Manhours
4/03/78	1	--	Engineering Station over fill 2 TVR's	Assigned vehicles out of Eng. Restart TVR's	No M/A required	--
4/03/78	23	27902	Veh. #20 Los, Stop @ E3: FS= 110 Eng. Zone #2 Disparity (5 TVR's) Veh. #28 Comm loss @ 32 (1 TVR)	HW & SW Reset: Verified no PAX exited #28: Reapplied power/ resume service	Suspect PD E11 SW failed: Had unexpected PD hits @ E1-2 & E1-4 next vehicle repeated same	0
4/04/78	4	27909	Veh. #27: LOPP, Stop @ E11: FS=120 6 TVR's	In-motion after 2 min.	Veh. has TIS PV Pump: Rpl. 3.26 heaters w/3.56 heaters: ck ok	2.5
4/04/78	6	27914	Disparity Mnt. Zone 2: S12 & S13 on.	HW & SW Reset: Disparity cleared	PD 362 Disparity cleared w/HW reset: SW reset caused zone 5 disparity	.5
4/04/78	5	27914	Disparity MNT Zone 5	CAS Reset Zone 5: Set loc Veh. #21 to PD 47	Zone 5 reset & Engineering Station reset cleared disparity	--
4/04/78	11	27914	Los Veh. #43: Disparity Eng. Zone 1: 1 TVR, 1 overfill	CAS Reset M1; CAS reset Ø	Disparity cleared w/HW reset: SW reset caused zone 5 disparity: Zone 5 reset & Eng. Station reset cleared disparity	.5
4/04/78	14	27918	Veh. #21: LOPP, LOS @E4: FS=130	MOCU'd to E2-4 and S6'd	R&R aft bias hose: Serviced hydraulics: ck ok	4.5
4/04/78	2	--	Eng. Station overfill (4 TVR's)	Restart TVR's: resume service	No m/a required	--
4/05/78	22	27922	Veh. #45: LOS, Stop @ PDE3. No hydraulics: 3 TVR's	Manual Recovery	Manual to shop: R&R aft bias hose ck ok: serviced hydraulics	2.6
4/06/78	3	27926	Veh. #37: LOPP @359, Stop @ 360: FS=100	Assigned, in-motion	Ck'd pneumatics: ok: Set-up brakes ok. R&R brake fade flag fuse	2.5
4/06/78	2	27930	Veh. #17: LOPP @B13, Stop @ B14: FS=120 to 100	In-motion	Still open	--

Date	Down Time	ESMR #	Cause	Corrective Action	Maintenance Action	Manhours
4/07/78	9	27940	Veh. #18: LOPP @368, Stop @ 369: Went after 6 minutes (3 TVR's)	Assn.	Performed brake set-up: ck ok: replaced RR inner pad & flag fuse: repositioned dust boots: lockwired calipers	10.5
4/10/78	13	27955	Veh. #17: LOPP, Stop @ 375: FS=120 (7 TVR's)	MOCU to B3 & park. Restart TVR's	Still open	--
4/11/78	10	27968	Veh. #45: LOS, Stop @ E-3 FS=100 6 TVR's	Switch Verified in station	Left fork assy. binding: Disassembled, cleaned, lubed, and reinstalled: Rpl. Sw. Verify harness & G/wheel	2.1
4/12/78	2	--	Overfill at Eng. Station (Bar entry on E2 Channel due to Phase II construction)	Restart vehicles	No M/A required	--
4/12/78	3	26976	CAS Disparity BEE Zone #3. Rec'd Unexpec. PD hit from Zones #3 & #6 (Zone #6 shutdown)	HW & SW Reset: Didn't clear: ran vehicle thru - disparity cleared	Disparity cleared after activation of HW PD15: Replaced Block Control card: SN 300 W/301	18.5
4/12/78	10	27976	CAS Disparity BEE Station Zone #3. Disparity @ S33/34.	HW & SW reset: didn't clear/ ran vehicle thru - disparity cleared	See above	--
4/12/78	7	26976	CAS Disparity BEE Station Zone #3. Disparity @ S33/34.	Activated HW PD hit on PD16 HW reset - disparity cleared	See above	--
4/12/78	5	26976	Out of service - will attempt fix on BEE Zone #3 disparity S33/34	Changeout Block Control card for S34 (PD15) - HW & SW reset - disparity cleared	See above	--
4/13/78	32	26984	Veh. #15: LOPP, US @ 364, Stop @ 369. Eng overfill (2 TVR's)	Manual Recovery	Manual Recovery: Lights went out & ECU quit W/Propulsion Contractor engaged: R&R F3 fuse: Rpl. A-1 Module & K-1 contacts.	6.5

Date	Down Time	ESMR #	Cause	Corrective Action	Maintenance Action	Manhours
4/14/78	8	27993	Veh. #1: OD, Stop @32. Comm loss Power trip. 4 veh. stopped by Power trip	Tech went to vehicle. Power up: moved vehicle	Still open	--
4/14/78	1	--	Station overfill @ Eng. Running single channel due to Phase II construction	Restart stopped vehicles	No M/A required	--
4/17/78	4	30008	Veh. #37: LOPP @ 365, OD, Stop #367. FS= 120 (5 TVR's)	Cycled CB17: Limped to B3: resume service	Replaced A-2 Module: ck ok	3.0
4/19/78	30	30039	Veh. #23: LOPP @ 370, Stop @ 371 FS=120	Manual Recovery	Found water in propulsion cabinet: F2 & F3 blown: Replaced A-1 module and fuses	3.0
	30	30040	Veh. #30: TVR'd @357: CF, LOPP while setting: FS=120 (No hydraulics)	Manual Recovery	Replaced K-7 contacts in rt. distribution box: ck ok	9.5
4/19/78	30	30042	Veh. #6: LOPP @ 59, Stop @E1 FS=120 (No hydraulics) 3 TVR's	Manual Recovery	Found ¼" hydraulic line rubbing shock, split open. R&R line (#155) ck ok	3.0
4/20/78	11	30047	Veh. 43: LOPP, Stop @338: FS= 120 CF, LOPP @339 FS=122 (1 TVR)	MOCU to MA1 & Pull. Restart TVR	Return line from solenoid valve broken in sleeve. Repaired line, serviced hydraulics, ck ok	1.5
4/20/78	4	--	Dog entered g/w @B2-1. Dmds. 50 sch. 140 - attempting to pinpoint loc of animal	Dog found and removed from system - sch. #139. PAX svc resumed	No ESMR written	--
4/25/78	4	28405	Veh. #20: LOPP, Stop @B9: FS=140 to 100	Assigned - no go. 0 & 100 P.L.	R&R both batteries & checked out battery charger. Ops ck ok	.7
4/25/78	28	28408	Veh. #30: LOPP, Stop @E3: FS=120 (5 TVR's)	Manual recovery	Hydraulic wiring burnt @ J-box connector: Replaced damaged wires: sealed splices	8.4
4/27/78	8	28424	Veh. #15: LOS, LOPP, CF @B24: FS=122. (1 TVR)	MOCU forward to reseat collector	Found break in wire to receive antenna. R&R VCCS Antenna Coupler: ck ok	4.0

Vehicle Mileage and Maintenance Summary — Section B

April 1, 1978 - April 30, 1978

Veh. #	Total Miles	Mileage 4/1-4/30/78	Unscheduled ESMR's Closed	Scheduled ESMR's Closed	Total ESMR's Closed
1	32336	1189	9	3	12
2	40518	150	5	1	6
*3	1694	0	0	0	0
4	53070	2234	8	6	14
5	65659	2669	5	6	11
6	29668	2324	4	5	9
*7	0	0	0	0	0
*8	401	0	0	0	0
9	47485	2562	5	8	13
*10	8972	0	0	0	0
11	48173	2532	9	5	14
12	57271	2340	4	5	9
*13	30849	0	0	0	0
*14	228	0	0	0	0
15	52913	2229	9	5	14
16	13287	0	0	0	0
17	47660	1857	3	3	6
18	39662	2113	15	3	18
*19	12457	0	0	0	0
20	47429	1894	1	5	6
21	59651	2396	13	5	18
*22	3792	0	0	0	0
23	65317	2033	9	5	14
*24	22841	0	0	0	0
25	56141	2152	11	5	16
*26	13857	0	0	0	0
27	40023	1863	14	6	20
28	50046	2484	6	6	12
29	51387	2929	12	6	18
30	57429	1776	11	6	17
31	40109	1196	14	3	17
32	62323	2361	6	6	12
33	36475	1930	4	4	8
34	26826	0	0	0	0
*35	26124	0	0	0	0
36	63015	2420	8	8	16
37	54292	1170	8	2	10
*38	25392	0	0	0	0
*39	14617	0	0	0	0
*40	4757	0	0	0	0
41	60630	2374	2	7	9
*42	12142	0	0	0	0
43	57026	2324	7	5	12
44	18370	0	0	0	0
45	49834	2236	18	4	22

*These vehicles are in Seattle and will reflect no Maintenance Actions or changes in mileage.

Failure and Maintenance Summary by Subsystem

April 1, 1978 - April 30, 1978

Code	Subsystem	Unsched. ESMR's Closed	Failures	Ex. Wear	Adj.	Unconf.	Other
VE00	General/Unclassified	87	0	0	0	14	73
VE01	Passenger Module	23	5	0	8	1	9
VE02	Hydraulics	16	11	0	2	0	3
VE03	Pneumatics	13	4	0	3	1	5
VE04	Chassis	9	2	2	3	1	1
VE05	Steering	16	4	2	7	1	2
VE06	Braking	11	3	3	1	1	3
VE07	Electrical	29	16	6	3	1	3
VE08	Propulsion	20	10	1	4	1	4
VE09	VCCS	7	4	0	1	0	2
VE10	ECU	9	2	0	2	0	5
Total Vehicle		240	61	14	34	21	110
CC00	C&CS	0	0	0	0	0	0
CC01	Passenger Display	0	0	0	0	0	0
CC02	CAS	6	1	0	2	0	3
CC03	Operator Console	19	6	0	9	1	3
CC04	Communication	1	1	0	0	0	0
CC05	DHU/DA	0	0	0	0	0	0
CC06	Fare Collection	110	89	0	14	4	3
CC07	Computer	15	2	0	0	10	3
CC08	Software	0	0	0	0	0	0
Total C&CS		151	99	0	25	15	12
EQ00	Support Equip.	3	1	0	1	1	0
EQ01	Fixtures & Devices	17	6	0	1	7	3
EQ02	Mechan. Shop Equip.	1	0	0	0	0	1
EQ03	Elec. Shop Equip.	5	3	0	0	0	2
EQ04	General Purpose	0	0	0	0	0	0
EQ05	Tool Room Equip.	1	1	0	0	0	0
Total Support Equip.		27	11	0	2	8	6
SB00	Buildings & Structures	4	0	0	0	0	4
SB01	Maintenance	13	1	0	0	0	12
SB02	Engineering	0	0	0	0	0	0
SB03	Beechurst	3	0	0	1	1	1
SB04	Walnut	0	0	0	0	0	0
SB05	GW Heat Bldgs	0	0	0	0	0	0
SB06	Fencing and Grounds	2	1	0	0	0	1
SC00	GW C&CS	0	0	0	0	0	0
SC01	Presence Detectors	2	1	0	0	0	1

Code	Subsystem	Unsched. ESMR's Closed	Failures	Ex. Wear	Adj.	Unconf.	Other
SC02	Loop Installation	1	1	0	0	0	0
SC03	Cable, J-Box, & Wiring	0	0	0	0	0	0
SE00	Electrical System	0	0	0	0	0	0
SE01	23 KV Power	1	0	0	0	0	1
SE02	575V Pwr. & Control	3	1	0	0	1	1
SE03	Housekeeping Power	0	0	0	0	0	0
SE04	GW & Platform Lights	0	0	0	0	0	0
SE05	UPS	0	0	0	0	0	0
SE06	Emergency Generators	0	0	0	0	0	0
SG00	GW & Structures	0	0	0	0	0	0
SG01	Guideway	0	0	0	0	0	0
SG02	Coping and Supports	0	0	0	0	0	0
SG03	Power Rails	1	1	0	0	0	0
SG04	Steering Rails	0	0	0	0	0	0
SG05	Drainage	0	0	0	0	0	0
SG06	GW Heating	0	0	0	0	0	0
SX00	Auxillary Services	0	0	0	0	0	0
SX01	Air Conditioning	4	1	0	3	0	0
SX02	Humidification System	0	0	0	0	0	0
SX03	Fire Alarms	0	0	0	0	0	0
SX04	Comfort Heat	0	0	0	0	0	0
SX05	Hot Water & Plumbing	0	0	0	0	0	0
SX06	Compressed Air	0	0	0	0	0	0
Total S&PDS		34	7	0	4	2	21
Total of all Subsystems		452	178	14	65	46	149
% of Total		100%	39.38%	3.09%	14.38%	10.18%	32.96%

Top Ten Problem Subsystems

April 1 - April 30, 1978

1.) Fare Collection - CC06 - The 110 Maintenance Actions completed involved: 81 Trapped multiple fare cards, 8 gate PCB failures, 6 Fare Card Dispenser problems, 3 reference other ESMR, 4 problems not duplicated, 2 Gate repair or adjustments, 2 turnstile problems, 2 Gate parts reworked, 1 new multi-fare card check, and one Gate counter inoperative.

2.) Vehicle General - VE00 - The 87 Maintenance Actions completed involved: 68 blanket ESMR's for Vehicle support, 15 unconfirmed vehicle anomalies, and 4 reference other ESMR.

3.) Vehicle Electrical - VE07 - The 29 Maintneance Actions completed involved: 5 circuit breaker resets/change-outs, 5 miscellaneous wiring problem, 3 miscellaneous collector problems, 3 Battery/Charger failures, 3 collector reworked, 2 power collector roller assembly problems, 2 contactor contacts reworked, 1 warn collector brushes, 1 worn power collector hinge, 1 Agastat failure, 1 ground brush bracket problem, 1 collector knuckle worn, and 1 broken collector retainer.

4.) Vehicle Passenger Module - VE01 - The 23 Maintenance Actions completed involved: 8 door Mechanism problems, 6 fire extinguishers missing, 6 leaky windows, 2 access panel problems, and 1 vehicle radio reworked.

5.) Vehicle Propulsion - VE08 - The 20 Maintenance Actions completed involved: 4 A-2 Module problems, 3 propulsion contactor problems, 3 contactors to stores for rework, 2 A-1 Module failures, 2 miscellaneous propulsion problems, 1 tachometer (encoder) failure, 1 propulsion fan problem, 1 for fuses blown, 1 for feed-thru filter failure, 1 A-2 module relay failure and 1 unconfirmed propulsion problem.

6.) Operator Console - CC03 - The 19 Maintenance Actions completed involved: 5 CCTV Camera adjustments, 5 Console lights out, 2 CCTV Camera failures, 2 CCTV Monitor failures, 1 Electrification panel problem, 1 alarm in Central, 1 Voice Recorder Failure, 1 reference other ESMR, and 1 unconfirmed problem.

7.) Fixtures and Devices - EQ01 - The 17 Maintenance Actions completed involved: 5 for part fabrication, 4 UHF handheld radio problems, 2 MOCU problems, 1 recovery jeep problem, 1 Manual Steering Set problem, 1 Parking Brake Release Kit problem, 1 test gauge problem, 1 de-icing equipment removal, and 1 for cleaning of the vehicle loading ramp.

8.) Vehicle Hydraulics - VE02 - The 16 Maintenance Actions completed involved: 6 Hydraulic leaks, 6 Aft bias hose replacements, and 4 Pump replacements.

9.) Vehicle Steering - VE05 - The 16 Maintenance Actions completed involved: 6 Guideaxle fork problems, 3 worn Guidewheels, 2 Power Steering valves repositioned, 1 replacement of steering bias spring spacer, 1 removal of steering parts, 1 leaky power steering valve, 1 wiring problem @ the reed switch, and 1 steering inspection.

10.) Computer System - CC07 - The 15 Maintenance Actions completed involved: 10 unconfirmed problems, 1 line printer light replaced, 1 failed component, and 3 other miscellaneous problems.

Vehicle Scheduled Maintenance Summary

April 1, 1978 - April 30, 1978

*MA	Number	MH	Average MH/Inspection
375	50	25.7	.51
750	55	34.5	.63
*** 6,000	2	41.0	20.50
36,000	1	23.5	23.50
39,000	3	43.5	14.50
45,000	1	13.2	13.20
48,000	2	40.1	20.50
51,000	1	15.3	15.30
54,000	2	56.1	28.05
57,000	1	13.7	13.70
**Aft Bias Hose Replacement	11	6.6	.60

*375 and 750 mile checks are interval checks; all others are by accumulated vehicle miles.

**Aft Bias Hose replacement was waived on several vehicle SSM's due to a lack of spares and was performed at a later date.

***A shortened SSM performed at 60,000 mi. due to major items being performed earlier.

Unscheduled Maintenance Summary

April 1 - April 30, 1978

Code	Problem	O	DT	MH
CC02-1	CAS Disparities	4	29	2.5
CC02-4	Block Control PCB failure	1	25	18.5
CC02-5	Inadequate CAS reset procedure	1	237	25.0
CC03-5	Operator Console Lights out	5	0	13.4
CC03-7	CCTV Camera failures	2	0	9.0
CC03-8	Voice Recorder failures	1	0	.5
CC03-9	CCTV Camera Adjustments	5	0	8.3
CC03-12	Unconfirmed Operator Console problems	1	0	1.0
CC03-14	Alarm in Central	1	0	.5
CC03-15	Reference other ESMR	1	0	0
CC03-21	CCTV Monitor failure	2	0	1.0
CC03-20	Electrification Panel Problems	1	0	2.1
CC04-5	FSK Transmitter PCB failure	1	0	6.0
CC06-1	Gate repairs and adjustments (includes trapped MFC)	83	0	93.5
CC06-2	Gate PCB failures	8	0	19.0
CC06-5	Fare Card Dispenser Problems	6	0	1.9
CC06-9	Reference Other ESMR	3	0	0
CC06-10	Gate Counter inop.	1	0	.5
CC06-11	Problem not duplicated (gate)	4	0	5.4
CC06-8	New Multi-Fare card check	1	0	.3
CC06-16	Turnstile Problem	2	0	3.0
CC06-17	Gate Parts reworked	2	0	3.9
CC07-1	Computer/Equipment Malfunctions	15	0	0
EQ00-7	Sedan, VAn problems	3	0	5.1
EQ01-1	Recovery Jeep Malfunctions	1	0	1.5
EQ01-3	Part Fabrication	5	0	40.5
EQ01-9	Manual Steering Set Problems	1	0	10.0
EQ01-11	MOCU problems	2	0	4.0
EQ01-12	UHF Handheld Radio problems	4	0	1.8
EQ01-13	Parking Brake Release Kit	1	0	4.0
EQ01-14	Test Gauge	1	0	.4
EQ01-15	Remove De-icing Equip.	1	0	.5
EQ01-2	Vehicle Loading Ramp Repair	1	0	2.0
EQ02-5	Shop Equipment	1	0	1.0
EQ03-1	Electronic Support Equipment Malfunctions	1	0	2.0
EQ03-5	Card Tester Problems	3	0	8.8
EQ03-6	Fabricate Test Gear	2	0	9.5
EQ05-1	Tool Room Equipment	1	0	8.0
SB00-1	Blanket ESMR's	3	0	6.0
SB00-3	Move Storage Shed	1	0	24.0
SB01-5	Maintenance Area clean-up	4	0	215.9
SB01-6	Miscellaneous System Support	4	0	220.5
SB01-7	Training	2	0	27.2
SB01-8	Shop Garage Door repair	3	0	10.8
SB03-3	Ceiling leaks water	1	0	4.0
SB03-4	Door Insecure	1	0	1.0
SB03-7	Clean Station	1	0	.2
SB06-1	Security Fence Insecure	2	0	.3
SC01-1	Presence Detector Failures	2	0	18.0
SC02-1	FSK Loop Problems	1	0	9.0
SE01-1	Inspect HV-1 Substation	1	0	1.0

Code	Problem	O	DT	MH
SE02-1	Substation Problems	1	0	2.0
SE02-4	Power Warning Lights Out	1	0	.5
SE02-5	Power down for PH II Support	1	0	5.0
SG03-6	Power Rail Fire	1	0	24.0
SX01-1	Air Conditioning Malfunctions	4	0	6.7
VE00-3	Blanket ESMR's for Vehicle Support	68	0	142.9
VE00-1	Unconfirmed Vehicle Anomalies	15	0	16.8
VE00-4	Reference other ESMR	4	0	.5
VE01-1	Vehicle Door Mechanism Inoperative	8	5	26.4
VE01-2	Fire Extinguisher Missing/Discharged	6	0	1.4
VE01-9	Vehicle Window leaks	6	0	1.5
VE01-10	Access Panel Problems	2	0	.8
VE01-12	Vehicle Radio Rework	1	0	0
VE02-1	Hydraulic Leaks	6	41	11.6
VE02-3	Hydraulic Pump replacemtnt	4	0	27.5
VE02-5	Aft Bias Hose replacement	6	26	17.7
VE03-1	Height Control Valve problems	2	0	2.3
VE03-3	Triac Assembly Malfunctions	1	0	3.3
VE03-7	Pneumatic Compressor Failures	1	0	4.6
VE03-8	Collector Actuator Problems	1	0	1.0
VE03-9	Unconfirmed Pneumatic Problems	1	0	1.0
VE03-10	Compressor Rework	7	0	19.3
VE04-3	Leaks in Hub Assembly	1	0	2.0
VE04-4	Defective/Worn Tires	3	0	1.7
VE04-5	Vehicle Alignment	2	0	1.6
VE04-10	Tire Air Pressure requires adjustment	2	0	.8
VE04-12	Weigh Tires	1	0	2.0
VE05-2	Worn Guidewheel	3	0	3.6
VE05-11	Steering Inspection	1	0	.2
VE05-13	Guideaxle fork problems	6	10	7.6
VE05-14	Wiring Problem @ Reed Switch	1	0	3.0
VE05-16	Power Steering Valve Leaks	1	0	2.0
VE05-23	Power Steering Valve repositioned	2	0	.6
VE05-24	Steering Parts removal	1	0	1.0
VE05-25	Replace Steering Parts per directive	1	0	4.3
VE06-1	Brake Adjustment/Evaluation	1	4	3.0
VE06-2	Worn Brake Rotors	3	0	6.5
VE06-13	Brake Fade Fuse blown	2	3	13.0
VE06-15	Grease on Rotor	2	0	5.2
VE06-16	Drill & Tap Pads for Heat Sensors	1	0	8.0
VE06-17	Reference other ESMR	2	9	4.5
VE07-1	Power Collector Roller Assembly Problems	2	0	1.6
VE07-4	Circuit Breaker Reset/Changes	5	34	19.3
VE07-7	Worn Brushes	1	0	.5
VE07-6	Worn/Broken Power Collector Hinge	1	0	.5
VE07-10	Battery/Charger Failure	3	0	5.5
VE07-13	Agastat Failures	1	0	2.5
VE07-14	Miscellaneous Wiring problems	5	28	11.6
VE07-15	Ground Brush Bracket problems	1	0	3.0
VE07-16	Miscellaneous Collector problems	3	0	1.3
VE07-19	Collector Rework	3	0	9.9
VE07-26	Contactor Contacts Reworked	2	0	2.7
VE07-27	Collector Knuckle worn	1	0	.5
VE07-5	Broken Power Collector retainer	1	0	4.0
VE08-2	A-1 Module Failures	2	32	13.5
VE08-13	Propulsion Contactor Problems	3	0	22.0

Code	Problem	O	DT	M/H
VE08-16	A-2 Module Relay Failure	1	0	8.0
VE08-17	A-2 Module Failure	4	0	17.4
VE08-18	Contactor to stores for repair	3	0	3.9
VE08-20	Unconfirmed Propulsion Problems	1	0	2.7
VE08-21	Miscellaneous Propulsion Problems	2	0	6.6
VE08-22	Feed-thru Filter failure	1	0	10.0
VE08-23	Fuses Blown	1	0	1.0
VE08-24	Propulsion Fan Problems	1	0	5.0
VE08-9	Tachometer (Encoder) Failure	1	0	3.0
VE09-3	VCCS Transmit Antenna Problems	2	0	13.0
VE09-4	VCCS Receive Antenna Problems	2	0	5.1
VE09-6	Power Supply Failures	1	0	8.0
VE09-10	Reference other ESMR	1	0	1.0
VE09-11	Prepare VCCS parts for shipment to Boeing	1	0	0
VE10-4	Thermostat replacement	1	0	5.5
VE10-12	Prepare ECU's for shipment to Boeing	3	0	2.5
VE10-13	Air Conditioner Inoperative	3	0	.4
VE10-14	ECU parts reworked in stores	1	0	.5
VE10-15	Defective Switch	1	0	6.0

APPENDIX B: MPM OPERATIONAL DATA BASE

The following printout is a compilation of the daily logs of the MPM. The content of the columns in the printout is identified on page B-2. The records are maintained on tape at the Transportation Systems Center and cover almost the entire life of the system, from October 1975, through June 1978, a span of 2.75 years. A few notes:

1. Nonoperating days: When the system was shut down for planned reasons, such as holdidays, school vacations, or similar causes, the "scheduled hours" column will either be zero or will be missing entirely. In either case the date and its hours will not be counted as downtime.

2. Terminology: Definitions of terms have been given in Section 3.

#	Variable	Description	Format	Columns
1	ID	Record ID	I3	1-3
2	IDT	Date	I4	5-8
3	IDAY	Day of week (1=Mon...7=Sun.)	I1	10
4	SCH	Scheduled operating hours	F5.2	12-16
5	ACH	Actual operating hours	F5.2	18-22
6	DW	Downtime	F5.2	24-28
7	IDWE	Downtime events	I2	30-31
8	ADW	Average downtime (=DW/IDWE)	F5.2	33-37
9	RAVL	System availability (ACH/SCH)	F7.4	39-45
10	AVL	Sys/veh. availability	F7.4	46-51
11	REL	Trip Reliability	F7.4	53-58
12	CN	Conveyance dependability (AVL X REL)	F7.4	60-65
13	MAX	Maximim number of vehicles available	I2	67-68
14	MIN	Minimum number of vehicles available	I2	70-71
15	AN	Average number of vehicles available	F4.1	73-76
16	NOP	Number of vehicles operated	I2	77-78
17	NF	Number of vehicles removed due to failure	I2	80-81
18	IFL	Fleet mileage	I5	83-87
19	ISFR	Single Fares	I4	89-92
20	MFR	Multiple Fares	I5	94-97
21	IRD	Total number of passengers (Ridership)	I5	99-102
22	IY	Year	I1	104

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	1001	3	13.00	13.00	0.00	0	0.00	1.0000	1.0000	0.9990	0.9990	21	17	19.3	0	0	2383	0	0	0	5
2	1002	4	13.00	10.22	2.88	7	0.40	0.7859	0.7859	0.9860	0.7750	20	5	15.0	20	0	1782	0	0	0	5
3	1003	5	13.00	9.43	3.57	7	0.31	0.7256	0.7256	0.9920	0.7190	17	8	12.5	20	0	1486	0	1949	1949	5
4	1004	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	14	15.0	16	0	1077	0	991	991	5
5	1005	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9890	0.9890	15	12	13.0	15	0	880	0	0	0	5
6	1006	1	13.00	13.00	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	12	14.0	15	0	2251	0	1181	1181	5
7	1007	2	13.00	11.17	1.83	3	0.67	0.8590	0.8540	0.9960	0.8500	15	10	13.3	20	0	1608	0	1243	1243	5
8	1008	3	8.25	7.42	0.83	4	0.21	0.8990	0.8990	0.9940	0.8936	16	12	13.0	17	0	1327	0	2659	2659	5
9	1009	4	8.25	7.65	0.60	2	0.30	0.9270	0.9270	0.9970	0.9240	15	12	14.0	16	0	1398	0	2256	2256	5
10	1010	5	8.25	6.52	1.73	4	0.43	0.7890	0.7890	0.9920	0.7830	18	15	16.9	20	0	1712	0	2566	2566	5
11	1011	6	6.00	5.70	0.30	2	0.15	0.9500	0.9500	0.9960	0.9460	17	15	16.4	18	0	1155	0	1263	1263	5
12	1012	7	5.50	4.67	0.83	4	0.21	0.8490	0.8490	0.9920	0.8420	19	15	18.1	21	0	945	0	0	0	5
13	1013	1	8.00	7.05	0.95	4	0.24	0.8810	0.8810	0.9860	0.8690	19	12	16.2	20	0	1480	0	3800	3800	5
14	1014	2	8.00	7.35	0.65	1	0.65	0.9186	0.9186	0.9895	0.9080	21	16	18.6	21	0	1399	0	2704	2704	5
15	1015	3	8.00	6.47	1.53	4	0.38	0.8080	0.8080	0.9890	0.7990	18	7	11.8	19	0	1180	0	3136	3136	5
16	1016	4	8.00	7.40	0.60	2	0.30	0.9250	0.9250	0.9960	0.9210	18	15	16.0	19	0	1660	0	3125	3125	5
17	1017	5	8.00	4.82	3.18	8	0.40	0.6020	0.6020	0.9760	0.5870	20	9	15.0	21	0	1069	0	3667	3667	5
18	1018	6	5.50	3.95	1.55	3	0.52	0.7182	0.7182	0.9840	0.7067	14	9	13.0	16	0	770	0	0	0	5
19	1019	7	4.50	4.50	0.00	0	0.00	1.0000	1.0000	0.9940	0.9940	14	11	12.5	15	0	902	0	1922	1922	5
20	1020	1	9.50	8.52	0.98	4	0.24	0.8950	0.8950	0.9830	0.8790	14	11	13.4	14	0	1688	0	5913	5913	5
21	1021	2	9.50	7.60	1.90	1	1.90	0.8000	0.8000	0.9930	0.7940	15	12	14.0	16	0	1379	0	4803	4803	5
22	1022	3	9.50	8.57	0.93	5	0.19	0.9020	0.9020	0.9790	0.8830	19	12	15.8	19	0	1621	0	5596	5596	5
23	1023	4	9.50	8.85	0.65	3	0.22	0.9320	0.9320	0.9810	0.9140	23	17	20.7	26	6	1965	314	5278	5592	5
24	1024	5	9.50	7.63	1.87	5	0.37	0.8030	0.8030	0.9890	0.7940	22	16	19.2	24	8	1743	658	5450	6108	5
25	1025	6	4.50	3.93	0.57	1	0.57	0.8740	0.8740	0.9870	0.8630	24	18	21.9	25	5	781	0	0	0	5
26	1026	7	5.50	4.73	0.77	5	0.15	0.8600	0.8600	0.9910	0.8520	19	12	14.4	21	4	885	753	1165	1918	5
27	1027	1	13.00	9.82	3.18	3	1.06	0.7550	0.7550	0.9810	0.7410	20	16	17.6	22	4	2244	343	7221	7564	5
28	1028	2	13.00	11.53	1.47	1	1.47	0.8850	0.8850	0.9940	0.8800	23	20	22.0	23	4	2350	478	6645	7123	5
29	1029	3	13.00	8.47	4.53	3	1.51	0.6520	0.6520	0.9840	0.6420	23	14	18.2	26	8	1659	274	5188	5188	5
30	1030	4	13.00	10.32	2.68	6	0.44	0.7960	0.7960	0.9760	0.7770	20	15	16.1	22	5	2078	283	4882	5165	5
31	1031	5	13.00	11.98	1.02	6	0.17	0.9220	0.9220	0.9840	0.9070	19	9	12.9	22	11	2017	375	5837	6212	5
32	1101	6	5.50	4.72	0.78	4	0.19	0.8580	0.8580	0.9810	0.8442	16	12	14.4	21	5	1017	466	172	638	5
33	1102	7	5.50	3.78	1.72	5	0.34	0.6870	0.6870	0.9430	0.6480	15	12	13.7	16	1	558	673	839	1512	5
34	1103	1	13.00	10.80	2.20	3	0.73	0.8310	0.8310	0.9930	0.8250	14	8	11.4	17	5	1586	460	5090	5550	5
35	1104	2	13.00	10.23	2.77	4	0.69	0.7870	0.7870	0.9830	0.7740	16	9	12.1	17	5	1430	566	3231	3797	5
36	1105	3	13.00	11.55	1.45	3	0.48	0.8880	0.8880	0.9950	0.8840	14	10	12.4	17	6	1797	352	4994	5346	5
37	1106	4	13.00	10.85	2.15	2	1.07	0.8350	0.8030	0.9880	0.8250	16	13	14.3	18	8	1869	538	5441	5979	5
38	1107	5	13.00	12.37	0.63	3	0.21	0.9560	0.9130	0.9940	0.9500	17	8	14.8	18	3	2264	641	5448	6089	5
39	1108	6	5.50	5.28	0.22	1	0.22	0.9600	0.8960	0.9920	0.9520	20	15	16.9	22	2	953	967	164	1131	5
40	1109	7	5.50	5.00	0.50	1	0.50	0.9090	0.8440	0.9860	0.8960	18	15	17.6	19	4	892	950	1091	2041	5
41	1110	1	13.00	12.47	0.53	1	0.53	0.9590	0.9290	0.9990	0.9280	16	13	14.1	17	4	2197	261	5414	5675	5
42	1111	2	13.00	11.78	1.22	2	0.61	0.9060	0.8410	0.9900	0.8330	16	11	12.6	17	5	1752	675	5219	5894	5
43	1112	3	13.00	10.78	2.22	6	0.37	0.8290	0.7320	0.9760	0.7140	18	6	12.1	20	9	1757	149	4061	4210	5
44	1113	4	13.00	12.15	0.85	4	0.21	0.9350	0.8410	0.9890	0.8320	15	9	12.3	18	8	1935	265	4730	4995	5
45	1114	5	13.00	12.37	0.63	4	0.16	0.9520	0.6760	0.9920	0.6710	14	6	8.3	15	6	1314	140	4095	4235	5
46	1115	6	5.50	3.90	1.60	2	0.80	0.7090	0.6670	0.9770	0.6510	15	13	13.7	15	2	914	418	1189	1607	5
47	1116	7	5.50	3.15	2.35	1	2.35	0.5720	0.3540	0.9950	0.3520	12	6	9.5	13	2	360	319	448	767	5
48	1117	1	13.00	13.00	0.00	0	0.00	1.0000	0.9340	0.9970	0.9310	16	10	13.9	18	5	2082	166	5022	5233	5
49	1118	2	13.00	11.92	1.08	5	0.22	0.9170	0.8660	0.9890	0.8560	16	10	14.2	19	7	1976	341	4711	5052	5
50	1119	3	13.00	11.10	1.90	5	0.38	0.8540	0.8440	0.9820	0.8290	22	17	18.4	25	11	2204	205	4887	5092	5
51	1120	4	13.00	13.00	0.00	0	0.00	1.0000	0.9560	0.9980	0.9540	16	13	14.6	18	4	2499	258	4725	4983	5
52	1121	5	13.00	11.50	1.50	3	0.50	0.8850	0.8580	0.9800	0.8410	21	10	14.3	22	8	2171	201	4127	4328	5
53	1122	6	5.50	5.50	0.00	0	0.00	1.0000	0.9640	1.0000	0.9640	18	17	17.2	18	1	1236	569	1234	1803	5
54	1123	7	5.50	2.75	2.75	2	1.38	0.5000	0.4800	1.0000	0.4800	18	15	15.6	20	2	576	256	557	831	5
55	1124	1	13.00	11.12	1.88	2	0.94	0.8850	0.8370	0.9930	0.8310	18	14	17.2	21	3	2043	132	3645	3777	5
56	1125	2	13.00	10.90	2.10	3	0.70	0.8380	0.8200	0.9920	0.8130	22	14	17.6	24	10	1937	272	2074	2346	5

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	57	1126	3	13.00	11.98	1.02	4	0.25	0.9220	0.8740	0.9950	0.8700	16	14	14.6	19	4	994	228	409	637	5
	58	1201	1	13.00	12.12	0.88	4	0.22	0.9320	0.9100	0.9920	0.9030	19	15	16.9	21	7	2203	185	4442	4627	5
	59	1202	2	13.00	11.45	1.55	4	0.39	0.8810	0.8630	0.9870	0.8520	21	12	17.9	22	9	2282	218	4249	4467	5
	60	1203	3	13.00	10.83	2.17	7	0.31	0.8330	0.8260	0.9920	0.8190	23	16	18.8	23	8	2150	146	4117	4263	5
	61	1204	4	13.00	12.52	0.48	2	0.24	0.9630	0.9630	0.9950	0.9580	26	22	23.8	28	2	2569	268	4457	4725	5
	62	1205	5	13.00	11.35	1.65	7	0.24	0.8730	0.8730	0.9860	0.8610	28	22	23.2	30	9	2330	201	3783	3984	5
	63	1206	6	9.50	6.65	2.85	5	0.57	0.7000	0.7000	0.9674	0.6771	29	25	26.8	31	5	1527	566	1848	2414	5
	64	1207	7	5.50	2.42	3.08	5	1.02	0.4400	0.4250	0.9920	0.4220	22	18	19.6	22	2	437	183	353	536	5
	65	1208	1	13.00	10.45	2.55	6	0.42	0.8040	0.7930	0.9810	0.7780	19	15	17.1	25	7	2012	218	7371	7589	5
	66	1209	2	13.00	11.47	1.53	7	0.22	0.8820	0.8600	0.9900	0.8510	19	13	16.3	24	10	2575	363	8562	8925	5
	67	1210	3	14.75	10.85	3.90	12	0.33	0.7360	0.7050	0.9810	0.6920	18	13	14.6	24	11	2392	232	7393	7625	5
	68	1211	4	13.00	12.57	0.43	2	0.22	0.9670	0.9430	0.9970	0.9400	19	11	16.7	23	8	2165	456	9380	9836	5
	69	1212	5	13.00	12.27	0.73	2	0.37	0.9440	0.9350	0.9970	0.9320	22	18	19.0	23	2	2846	287	8759	9046	5
	70	1213	6	5.50	5.08	0.42	2	0.21	0.9240	0.9240	0.9980	0.9220	24	22	22.6	26	3	1064	236	873	1109	5
	71	1214	7	5.50	4.27	1.23	2	0.64	0.7760	0.7750	0.9870	0.7550	23	13	20.4	26	3	531	196	357	493	5
	72	1215	1	13.00	9.32	3.68	10	0.37	0.7170	0.7150	0.9820	0.7020	25	19	21.6	27	7	2120	168	2515	2683	5
	73	1216	2	13.00	11.52	1.48	4	0.37	0.8860	0.8860	0.9900	0.8700	28	23	25.5	28	4	1681	134	4998	2678	5
	74	1217	3	13.00	11.10	1.90	9	0.21	0.8540	0.8540	0.9810	0.8380	27	21	23.9	29	9	1083	196	2879	3075	5
	75	1218	4	13.00	0.00	13.00	1	13.00	0.0000	0.0000	0.0000	0.0000	0	0	0.0	0	0	0	0	0	0	5
	76	1219	5	13.00	6.58	6.42	4	1.60	0.5060	0.4120	0.9930	0.4090	12	7	9.4	13	6	1002	90	654	744	5
	77	1220	6	5.50	2.88	2.62	3	0.87	0.5240	0.4290	0.9480	0.4070	12	11	11.4	12	0	508	121	207	328	5
	78	1221	7	5.50	4.82	0.68	3	0.23	0.8700	0.7530	0.9840	0.7410	13	11	12.1	14	4	655	39	49	88	5
	79	104	7	5.50	0.00	5.50	1	5.50	0.0000	0.0000	0.0000	0.0000	0	0	0.0	0	0	0	0	0	0	6
	80*	105	1	13.00	10.87	2.13	9	0.24	0.8362	0.6062	0.9809	0.5946	12	5	8.5	16	9	1801	121	940	1016	6
	81	106	2	13.00	10.90	2.10	7	0.30	0.8385	0.7606	0.9775	0.7435	15	8	13.0	17	5	1453	247	1919	2166	6
	82	107	3	13.00	12.33	0.67	2	0.34	0.9485	0.8688	0.9940	0.8636	15	10	12.8	18	9	1962	307	5811	6118	6
	83	108	4	13.00	4.38	8.62	9	0.96	0.3369	0.3117	0.9616	0.2997	16	13	14.5	17	5	853	90	2256	2346	6
	84	109	5	13.00	2.32	10.68	4	2.67	0.1785	0.1006	0.9867	0.0993	8	3	6.2	9	3	527	137	800	997	6
	85	110	6	5.50	0.53	4.97	2	2.49	0.0964	0.0547	0.9571	0.0523	7	6	6.2	7	1	121	10	229	239	6
	86	111	7	5.50	0.00	5.50	1	5.50	0.0000	0.0000	0.0000	0.0000	0	0	0.0	0	0	0	0	0	0	6
	87	112	1	13.00	10.17	2.83	11	0.26	0.7823	0.7084	0.9712	0.6880	15	10	12.6	19	8	1944	113	6047	6160	6
	88	113	2	13.00	10.88	2.12	6	0.35	0.8369	0.7949	0.9794	0.7785	16	11	14.2	20	9	2045	216	8257	8473	6
	89	114	3	13.83	11.72	2.11	9	0.24	0.8474	0.8207	0.9813	0.8054	17	12	15.0	21	10	2497	222	9424	9646	6
	90	115	4	13.00	11.17	1.83	8	0.23	0.8592	0.8343	0.9823	0.8195	18	12	16.0	21	9	2588	317	9141	9458	6
	91	116	5	13.00	8.18	4.82	6	0.80	0.6292	0.6241	0.9754	0.6087	21	18	18.9	23	3	1852	227	5952	6171	6
	92	117	6	5.50	1.25	4.25	2	2.13	0.2273	0.2273	1.0000	0.2273	21	19	19.4	22	3	756	33	204	237	6
	93	118	7	5.50	3.15	2.35	4	0.59	0.5727	0.5333	0.9681	0.5163	18	9	13.5	22	3	560	34	204	238	6
	94	119	1	13.00	6.60	6.40	5	1.28	0.5077	0.4987	0.9831	0.4903	20	13	16.8	21	7	1178	141	3739	3880	6
	95	120	2	13.00	11.05	1.95	6	0.33	0.8500	0.8307	0.9925	0.8245	18	11	17.2	23	5	2826	264	9273	9537	6
	96	121	3	15.00	14.42	0.58	3	0.19	0.9613	0.9516	0.9972	0.9489	21	14	19.0	24	2	2909	244	10344	10588	6
	97	122	4	13.00	6.38	6.62	10	0.66	0.4908	0.4837	0.9725	0.4704	24	11	22.3	25	6	1492	153	6109	6262	6
	98	123	5	13.00	10.98	2.02	8	0.25	0.8446	0.8041	0.9866	0.7933	17	8	14.8	19	5	2629	242	4945	5187	6
	99	124	6	5.50	3.63	1.87	2	0.93	0.6600	0.6606	0.9762	0.6449	18	16	17.1	19	2	763	191	546	737	6
	100	125	7	5.50	3.40	2.10	6	0.35	0.6182	0.6182	0.9830	0.6077	19	14	17.2	20	2	584	120	342	462	6
	101	126	1	14.00	12.70	1.30	3	0.43	0.9071	0.8769	0.9913	0.8693	23	8	16.7	25	3	1874	157	6465	8622	6
	102	127	2	13.00	5.25	7.75	5	1.55	0.4038	0.3950	0.9835	0.3885	23	16	18.2	23	7	1349	150	4882	5032	6
	103	128	3	15.00	9.98	5.02	13	0.39	0.6653	0.6560	0.9735	0.6386	17	13	15.2	19	9	2962	139	4788	4927	6
	104	129	4	13.00	11.83	1.17	4	0.29	0.9100	0.8832	0.9955	0.8792	18	14	16.0	22	8	3358	215	5652	5867	6
	105	130	5	13.00	12.13	0.87	4	0.22	0.9331	0.9183	0.9899	0.9090	19	16	17.9	20	3	3351	336	4073	4409	6
	106	131	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9970	0.9970	19	17	17.9	19	1	992	47	577	624	6
	107	201	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	16	17.9	20	3	959	43	522	565	6
	108	202	1	13.00	6.15	6.85	9	0.76	0.4731	0.2858	0.9714	0.2792	8	5	6.8	11	6	982	31	976	1007	6
	109	203	2	14.50	14.25	0.25	1	0.25	0.9828	0.9503	0.9964	0.9469	18	13	5.5	21	3	3527	139	4340	4479	6
	110	204	3	13.00	10.43	2.57	3	0.86	0.8023	0.7817	0.9953	0.7780	19	14	16.0	23	5	1996	194	3607	3801	6

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
111	205	4	13.00	7.43	5.57	4	1.39	0.5715	0.5287	0.9887	0.5227	15	8	11.0	18	4	1238	72	4006	2078	6
112	206	5	13.00	11.03	1.97	2	0.98	0.8485	0.8230	0.9941	0.8181	17	12	16.9	19	2	2583	86	2541	2627	6
113	207	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9962	0.9962	18	16	17.0	19	3	1983	52	604	656	6
114	208	7	5.50	3.98	1.52	1	1.52	0.7236	0.7242	0.9818	0.7110	18	15	16.9	19	2	546	19	224	243	6
115	209	1	13.00	9.72	3.28	11	0.30	0.7477	0.7412	0.9811	0.7272	24	17	20.9	26	10	2046	292	3401	3693	6
116	210	2	13.00	11.97	1.03	5	0.21	0.9208	0.9205	0.9916	0.9128	28	24	25.9	30	5	2355	200	4151	4351	6
117	211	3	14.00	12.48	1.52	9	0.17	0.8914	0.8917	0.9818	0.8755	29	17	23.2	29	12	2250	198	4014	4212	6
118	212	4	13.00	9.75	3.25	13	0.25	0.7500	0.7469	0.9781	0.7305	21	15	18.4	24	10	1710	212	3339	3551	6
119	213	5	13.00	7.08	5.92	4	1.48	0.5446	0.5339	0.9837	0.5252	16	13	14.2	19	3	1297	122	1102	1224	6
120	214	6	5.50	5.00	0.50	3	0.17	0.9091	0.8092	0.9760	0.7898	17	11	13.4	17	0	837	104	645	749	6
121	215	7	5.50	0.00	5.50	1	5.50	0.0000	0.0000	0.0000	0.0000	18	18	18.0	18	0	65	0	0	0	6
122	217	2	13.00	10.85	2.15	8	0.27	0.8346	0.8171	0.9880	0.8073	20	14	17.2	24	5	1756	144	3444	3588	6
123	218	3	13.00	4.57	8.43	3	2.81	0.3515	0.3513	0.9785	0.3437	24	21	23.0	26	2	652	89	1287	1376	6
124	308	1	13.00	11.53	1.47	4	0.37	0.8869	0.8290	0.9867	0.8180	14	11	13.0	15	5	1318	23	961	984	6
125	309	2	13.00	10.58	2.42	1	2.42	0.8138	0.7726	0.9976	0.7707	16	14	14.1	16	2	983	70	1427	1497	6
126	310	3	13.00	12.10	0.90	4	0.23	0.9308	0.8481	0.9921	0.8414	15	11	13.2	16	1	1340	105	2165	2270	6
127	311	4	13.00	11.88	1.12	3	0.37	0.9138	0.8992	0.9872	0.8877	20	15	17.4	24	8	1735	107	2608	2715	6
128	312	5	13.00	11.00	2.00	1	2.00	0.8462	0.8177	0.9956	0.8141	17	14	15.3	18	2	1607	93	2254	2347	6
129	313	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	14	15.1	16	0	686	167	408	575	6
130	314	7	5.50	5.42	0.08	1	0.08	0.9855	0.9788	0.9744	0.9537	15	14	14.3	16	2	1221	133	326	459	6
131	315	1	13.00	11.53	1.47	4	0.37	0.8869	0.7535	0.9919	0.7474	14	8	10.9	16	7	1873	92	2877	2969	6
132	316	2	13.00	12.38	0.62	3	0.21	0.9523	0.8270	0.9912	0.8197	13	9	11.0	15	6	2137	127	2620	2747	6
133	317	3	13.00	11.88	1.12	3	0.37	0.9138	0.8740	0.9918	0.8668	17	13	15.4	20	4	3014	102	2098	2200	6
134	318	4	13.00	12.70	0.30	2	0.15	0.9769	0.9141	0.9983	0.9125	14	12	13.3	15	3	2117	151	2551	2702	6
135	319	5	13.00	11.72	1.28	1	1.28	0.9015	0.8622	0.9937	0.8568	15	13	14.1	16	1	1848	140	2363	2503	6
136	320	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9943	0.9943	17	15	15.5	17	1	996	364	697	1061	6
137	321	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9944	0.9944	20	18	18.7	20	2	818	160	309	469	6
138	322	1	13.00	12.78	0.22	2	0.11	0.9831	0.9357	0.9965	0.9324	16	13	14.0	17	4	2711	188	2943	3131	6
139	323	2	13.00	12.05	0.95	4	0.24	0.9269	0.8239	0.9945	0.8194	13	10	11.4	16	5	2337	176	2747	2923	6
140	324	3	13.00	12.57	0.43	1	0.43	0.9669	0.9350	0.9948	0.9301	17	13	15.2	21	5	2495	180	2950	3130	6
141	325	4	13.00	12.10	0.90	4	0.23	0.9308	0.9218	0.9908	0.9133	20	17	18.3	22	3	1901	409	2828	3237	6
142	326	5	13.00	11.97	1.03	6	0.17	0.9208	0.8601	0.9924	0.8536	17	11	12.3	17	5	2165	452	2539	2991	6
143	327	6	5.50	5.50	0.00	0	0.00	1.0000	0.9939	0.9980	0.9919	15	14	14.0	15	1	1079	312	465	777	6
144	328	7	5.50	5.05	0.45	1	0.45	0.9182	0.9061	0.9973	0.9037	16	13	14.5	17	2	855	304	455	759	6
145	329	1	13.00	11.98	1.02	3	0.34	0.9215	0.8745	0.9962	0.8712	16	12	13.6	17	4	2468	201	2849	3050	6
146	330	2	13.00	12.35	0.65	2	0.33	0.9500	0.8656	0.9941	0.8605	18	9	13.1	18	8	2775	252	3270	3522	6
147	331	3	13.00	12.95	0.05	1	0.05	0.9962	0.9461	0.9965	0.9428	17	12	14.7	18	3	2359	213	2767	2980	6
148	401	4	13.00	13.00	0.00	0	0.00	1.0000	0.9842	0.9976	0.9818	20	14	17.0	22	5	2452	151	2846	2997	6
149	402	5	13.00	11.70	1.30	3	0.43	0.9000	0.8728	0.9908	0.8648	19	15	16.3	19	4	2168	383	1813	2196	6
150	403	6	5.50	5.13	0.37	1	0.37	0.9327	0.9333	0.9961	0.9297	21	19	19.7	21	1	1071	148	654	802	6
151	404	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	18	18	18.0	18	0	863	126	593	719	6
152	405	1	13.00	11.35	1.65	3	0.55	0.8731	0.8652	0.9877	0.8546	19	16	16.5	21	3	1995	140	2459	2599	6
153	406	2	13.00	10.45	2.55	7	0.36	0.8038	0.7893	0.9858	0.7781	21	16	18.7	22	2	1479	132	2321	2453	6
154	407	3	13.00	12.55	0.45	1	0.45	0.9654	0.9636	0.9923	0.9562	23	19	21.1	24	6	2749	185	2783	2968	6
155	408	4	13.00	12.45	0.55	2	0.28	0.9577	0.9577	0.9928	0.9508	23	21	22.0	26	4	2749	232	2848	3080	6
156	409	5	13.00	11.63	1.37	4	0.34	0.8946	0.8935	0.9846	0.8797	22	19	20.4	24	4	2656	204	2495	2699	6
157	410	6	5.50	5.23	0.27	1	0.27	0.9509	0.9515	0.9984	0.9500	22	21	21.0	22	1	1218	358	678	1036	6
158	411	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	24	22	22.7	24	1	836	151	286	437	6
159	412	1	13.00	12.43	0.57	5	0.11	0.9962	0.9545	0.9906	0.9456	23	19	20.5	27	6	2877	176	3014	3190	6
160	413	2	13.00	12.62	0.38	1	0.38	0.9708	0.9688	0.9992	0.9680	22	19	20.9	24	3	2772	326	2891	3217	6
161	414	3	13.00	12.22	0.78	3	0.26	0.9400	0.9397	0.9947	0.9347	24	19	22.1	26	5	2863	211	2871	3082	6
162	415	4	13.00	12.42	0.58	4	0.15	0.9554	0.9551	0.9902	0.9457	24	17	19.7	26	5	1913	363	2706	3069	6
163	416	5	13.00	12.10	0.90	4	0.23	0.9308	0.9164	0.9925	0.9036	20	13	15.7	20	4	1874	227	1689	1916	6
164	417	6	5.50	5.00	0.50	1	0.50	0.9091	0.9091	0.9900	0.9000	17	15	16.4	17	1	964	553	262	815	6
165	418	7	5.50	4.52	0.98	2	0.49	0.8218	0.8212	0.9692	0.7959	21	21	21.0	21	0	731	302	144	446	6

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	166	420	2	13.00	11.63	1.37	3	0.46	0.8946	0.8859	0.9882	0.8754	20	16	18.5	22	5	1994	307	3214	3521	6
	167	421	3	13.00	13.00	0.00	0	0.00	1.0000	0.9827	0.9987	0.9814	19	17	17.5	19	0	1762	262	3245	3507	6
	168	422	4	13.00	12.35	0.65	3	0.22	0.9500	0.9500	0.9972	0.9473	22	17	20.3	24	3	1643	335	2856	3191	6
	169	423	5	13.00	13.00	0.00	0	0.00	1.0000	1.0000	0.9976	0.9976	22	16	20.4	23	1	1990	351	2987	3338	6
	170	424	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	23	21	22.3	23	1	1183	377	489	866	6
	171	425	7	5.50	3.90	1.60	2	0.80	0.7091	0.7091	0.9640	0.6836	23	22	22.3	24	2	478	170	220	390	6
	172	426	1	13.00	12.63	0.37	1	0.37	0.9715	0.9718	0.9929	0.9649	23	20	21.1	25	4	1645	169	2749	2918	6
	173	427	2	13.00	13.00	0.00	0	0.00	1.0000	1.0000	0.9950	0.9950	24	21	22.9	25	2	1868	194	2931	3125	6
	174	428	3	13.00	12.83	0.17	1	0.17	0.9869	0.9872	0.9947	0.9820	28	24	26.7	29	2	2195	281	2896	3177	6
	175	429	4	13.00	12.42	0.58	4	0.15	0.9551	0.9551	0.9896	0.9452	26	23	24.7	28	2	1910	101	2590	2691	6
	176	430	5	13.00	12.77	0.23	2	0.12	0.9823	0.9821	0.9941	0.9763	24	21	22.4	26	5	1979	115	2952	3067	6
	177	501	6	5.50	4.58	0.92	2	0.46	0.8327	0.8333	0.9906	0.8255	22	21	21.2	23	1	757	141	366	507	6
	178	502	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	26	24	24.2	26	0	705	114	336	450	6
	179	503	1	13.00	13.00	0.00	0	0.00	1.0000	1.0000	0.9984	0.9984	24	19	21.0	25	3	1507	149	1512	1661	6
	180	504	2	13.00	13.00	0.00	0	0.00	1.0000	0.9920	0.9970	0.9890	21	17	18.7	23	2	1578	157	1708	1865	6
	181	505	3	13.00	11.52	1.48	6	0.25	0.8862	0.8841	0.9815	0.8677	23	17	21.9	25	7	1956	129	1305	1434	6
	182	506	4	13.00	13.00	0.00	0	0.00	1.0000	0.9983	0.9952	0.9935	22	19	20.5	23	2	1463	157	1751	1908	6
	183	507	5	13.00	12.00	1.00	2	0.50	0.9231	0.9231	0.9921	0.9158	24	23	23.0	26	2	1770	143	1531	1674	6
	184	508	6	5.50	5.25	0.25	2	0.13	0.9545	0.9545	0.9935	0.9482	23	21	23.3	24	1	848	382	430	812	6
	185	509	7	5.50	5.35	0.15	1	0.15	0.9727	0.9727	0.9920	0.9649	23	21	21.4	23	2	646	130	147	277	6
	186	510	1	13.00	12.57	0.43	4	0.11	0.9669	0.9632	0.9880	0.9516	23	20	20.9	23	6	1954	222	352	574	6
	187	511	2	11.92	9.60	2.32	4	0.58	0.8054	0.7979	0.9849	0.7859	20	16	17.8	21	3	1474	200	315	515	6
	188	512	3	11.82	11.78	0.04	1	0.04	0.9966	0.9972	0.9978	0.9950	23	18	21.5	23	0	1598	329	519	848	6
	189	513	4	10.75	10.67	0.08	1	0.08	0.9926	0.9922	0.9982	0.9904	24	20	22.5	25	4	3273	207	332	539	6
	190	514	5	10.20	10.20	0.00	0	0.00	1.0000	1.0000	0.9964	0.9964	24	23	23.6	25	1	1283	241	566	807	6
	191	515	6	8.50	8.33	0.17	1	0.17	0.9800	0.9804	0.9953	0.9758	24	21	22.2	24	2	1549	497	393	890	6
	192	516	7	8.50	8.43	0.07	1	0.07	0.9918	0.9922	0.9937	0.9859	25	22	22.5	25	2	1301	468	521	989	6
	193	517	1	13.00	12.75	0.25	2	0.13	0.9808	0.9736	0.9978	0.9715	23	17	19.9	25	5	2686	64	1332	1396	6
	194	518	2	13.00	12.68	0.32	2	0.16	0.9754	0.9630	0.9964	0.9595	20	15	17.0	20	4	2301	43	1719	1758	6
	195	519	3	13.00	12.03	0.97	2	0.49	0.9254	0.9140	0.9920	0.9067	19	17	18.0	20	2	1754	37	2076	2113	6
	196	520	4	13.00	12.83	0.17	1	0.17	0.9869	0.9828	0.9954	0.9783	21	19	19.8	22	2	3039	13	1983	1996	6
	197	521	5	13.00	12.50	0.50	2	0.25	0.9615	0.9525	0.9968	0.9495	20	18	18.5	22	2	2226	12	1890	1902	6
	198	522	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9916	0.9916	17	17	17.0	17	0	1004	80	288	368	6
	199	523	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	17	17.5	19	0	672	167	110	277	6
	200	524	1	13.00	13.00	0.00	0	0.00	1.0000	0.9845	0.9969	0.9814	20	16	17.8	20	2	1521	227	950	1177	6
	201	525	2	13.00	13.00	0.00	0	0.00	1.0000	0.9938	0.9970	0.9908	21	18	19.7	21	2	3131	196	797	993	6
	202	526	3	13.00	11.68	1.32	5	0.26	0.8985	0.8801	0.9882	0.8697	21	14	15.1	23	5	1686	209	874	1083	6
	203	527	4	13.00	12.73	0.27	1	0.27	0.9792	0.9732	0.9932	0.9666	21	17	18.8	23	6	1899	253	902	1155	6
	204	528	5	13.00	12.68	0.32	1	0.32	0.9754	0.9583	0.9950	0.9535	18	17	17.6	19	2	1870	249	977	1226	6
	205	529	6	5.50	4.58	0.92	2	0.46	0.8327	0.8333	0.9670	0.8058	19	17	17.5	19	3	980	148	337	485	6
	206	530	7	5.50	4.50	1.00	1	1.00	0.8182	0.8182	0.9900	0.8100	16	15	15.2	16	1	494	148	338	486	6
	207	601	2	13.00	12.75	0.25	1	0.25	0.9808	0.9612	0.9969	0.9582	18	16	16.9	20	2	1889	316	719	1035	6
	208	602	3	13.00	12.55	0.45	3	0.15	0.9654	0.9556	0.9979	0.9536	19	17	18.4	21	1	2811	357	813	1170	6
	209	603	4	13.00	13.00	0.00	0	0.00	1.0000	0.9741	0.9980	0.9722	21	14	16.5	22	2	2904	303	916	1219	6
	210	604	5	13.00	12.58	0.42	1	0.42	0.9677	0.9677	0.9965	0.9468	19	16	17.3	19	1	2672	254	771	1025	6
	211	605	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	18	18.6	19	0	1175	77	233	310	6
	212	606	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	18	18.0	19	0	895	66	200	266	6
	213	607	1	13.00	13.00	0.00	0	0.00	1.0000	0.9755	0.9974	0.9730	17	14	15.6	18	1	2733	341	858	1199	6
	214	608	2	13.00	12.53	0.47	3	0.16	0.9638	0.9395	0.9953	0.9351	19	15	16.8	20	2	2732	370	736	1106	6
	215	609	3	13.00	12.13	0.87	3	0.29	0.9331	0.9177	0.9942	0.9124	18	14	15.1	20	5	2638	385	855	1240	6
	216	610	4	13.00	13.00	0.00	0	0.00	1.0000	1.0000	0.9956	0.9792	19	15	17.1	20	1	2893	393	862	1255	6
	217	611	5	13.00	12.37	0.63	2	0.32	0.9515	0.9415	0.9898	0.9319	19	16	18.3	19	3	2970	377	836	1213	6
	218	612	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9940	0.9940	19	16	17.1	19	0	621	67	154	221	6
	219	613	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9960	0.9960	18	16	16.8	19	2	649	144	264	408	6
	220	614	1	13.00	12.40	0.60	2	0.30	0.9539	0.9345	0.9941	0.9290	17	15	16.3	19	2	2586	502	923	1425	6

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
221	615	2	13.00	12.23	0.77	3	0.26	0.9408	0.9366	0.9911	0.9283	20	17	18.9	20	2	3033	486	939	1425	6
222	616	3	13.00	12.73	0.27	1	0.27	0.9792	0.9618	0.9952	0.9572	18	15	16.6	19	0	2690	532	967	1499	6
223	617	4	13.00	12.90	0.10	1	0.10	0.9923	0.9674	0.9961	0.9636	18	14	16.5	20	3	2717	354	1202	1556	6
224	618	5	13.00	11.63	1.37	5	0.27	0.8946	0.8703	0.9894	0.8611	19	14	16.0	19	3	2437	431	817	1248	6
225	619	6	5.50	5.50	0.00	0	0.00	1.0000	0.9879	0.9930	0.9810	14	12	12.9	14	0	386	136	206	342	6
226	620	7	5.50	4.83	0.67	1	0.67	0.8782	0.9184	0.9790	0.8991	11	11	11.0	11	0	558	106	170	276	6
227	621	1	13.00	12.90	0.10	1	0.10	0.9923	0.9409	0.9862	0.9379	15	13	14.1	18	3	2034	281	978	1259	6
228	622	2	13.00	13.00	0.00	0	0.00	1.0000	0.9544	0.9967	0.9513	17	14	15.0	17	3	2469	329	1133	1462	6
229	623	3	13.00	13.00	0.00	0	0.00	1.0000	0.9316	1.0000	0.9316	17	12	13.8	19	2	2203	359	1134	1493	6
230	624	4	13.00	11.67	1.33	5	0.27	0.8977	0.8746	0.9881	0.8642	18	14	16.3	20	5	2366	334	1028	1362	6
231	625	5	13.00	12.42	0.58	1	0.58	0.9554	0.9515	0.9964	0.9481	21	16	19.2	21	2	2909	308	993	1301	6
232	626	6	5.50	5.33	0.17	1	0.17	0.9697	0.9697	0.9929	0.9628	21	20	20.1	21	0	1022	147	344	491	6
233	627	7	5.50	4.70	0.80	2	0.40	0.8545	0.8545	0.9940	0.8494	21	19	19.9	22	2	587	113	253	366	6
234	628	1	13.00	12.27	0.73	3	0.24	0.9438	0.9308	0.9887	0.9203	18	16	16.7	19	4	2486	476	1116	1592	6
235	629	2	13.00	11.43	1.57	2	0.78	0.8792	0.8679	0.9837	0.8538	20	16	18.5	21	2	2447	397	907	1304	6
236	630	3	13.00	11.93	1.07	4	0.27	0.9177	0.9065	0.9836	0.8916	19	16	17.7	21	6	2498	365	1282	1647	6
237	701	4	13.00	12.93	0.07	1	0.07	0.9946	0.9723	0.9917	0.9642	18	16	16.9	20	3	2684	753	1201	1954	6
238	702	5	13.00	12.92	0.08	1	0.08	0.9938	0.9773	0.9915	0.9690	19	16	17.5	20	1	2739	874	843	1717	6
239	703	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9920	0.9920	22	20	20.8	22	1	1204	312	203	515	6
240	706	2	13.00	11.88	1.12	4	0.28	0.9138	0.9030	0.9890	0.8931	18	16	17.1	21	4	2436	463	1274	1737	6
241	707	3	13.00	12.30	0.70	2	0.35	0.9462	0.9142	0.9947	0.9094	18	14	16.2	19	3	2446	481	1271	1752	6
242	708	4	13.00	12.40	0.60	2	0.30	0.9538	0.9323	0.9951	0.9277	17	16	16.3	18	1	2646	471	1069	1540	6
243	709	5	13.00	13.00	0.00	0	0.00	1.0000	0.9929	0.9970	0.9899	20	17	19.3	22	2	3078	490	1108	1598	6
244	710	6	5.50	4.95	0.55	1	0.55	0.9000	0.9000	0.9845	0.8861	21	17	18.3	22	3	1063	236	71	307	6
245	711	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9975	0.9975	20	17	18.5	20	0	665	288	87	375	6
246	712	1	13.00	11.65	1.35	7	0.19	0.8962	0.8865	0.9821	0.8706	20	17	18.5	22	6	2549	557	2040	2597	6
247	713	2	13.00	11.97	1.03	4	0.26	0.9208	0.9183	0.9837	0.9033	21	17	18.8	21	3	2867	557	1780	2337	6
248	714	3	13.00	12.38	0.62	2	0.31	0.9523	0.9314	0.9955	0.9272	19	16	17.2	20	2	2881	770	1927	2697	6
249	715	4	13.00	10.85	2.15	4	0.54	0.8346	0.8218	0.9913	0.8147	19	17	17.4	23	6	2953	373	1684	2057	6
250	716	5	13.00	12.83	0.17	2	0.08	0.9869	0.9617	0.9945	0.9564	18	14	16.6	19	2	2750	623	1654	2277	6
251	717	6	5.50	5.27	0.23	1	0.23	0.9582	0.9576	1.0000	0.9576	20	17	18.4	20	1	1020	208	566	774	6
252	718	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	18	18.4	19	0	674	207	506	713	6
253	719	1	13.00	12.73	0.27	3	0.09	0.9792	0.9610	0.9910	0.9524	20	16	16.9	20	3	2849	456	1926	2382	6
254	720	2	13.00	12.45	0.55	3	0.18	0.9577	0.9293	0.9948	0.9245	18	14	15.4	19	6	2458	438	1895	2333	6
255	721	3	13.00	12.52	0.48	1	0.48	0.9631	0.9254	0.9940	0.9198	21	12	16.1	22	4	2326	547	1779	2326	6
256	722	4	13.00	12.62	0.38	2	0.19	0.9708	0.9670	0.9847	0.9522	22	20	20.5	23	2	2902	436	1481	1917	6
257	723	5	13.00	11.80	1.20	1	1.20	0.9077	0.9059	0.9875	0.8946	23	21	21.4	24	1	2707	443	1121	1564	6
258	724	6	5.50	5.17	0.33	1	0.33	0.9400	0.9394	0.9941	0.9339	25	24	24.4	25	1	1015	134	368	502	6
259	725	7	5.50	5.33	0.17	1	0.17	0.9691	0.9697	0.9877	0.9578	22	20	21.1	23	2	761	134	371	505	6
260	726	1	13.00	12.48	0.52	3	0.17	0.9600	0.9603	0.9862	0.9470	23	21	21.8	23	3	3474	631	1676	2307	6
261	727	2	13.00	12.78	0.22	1	0.22	0.9831	0.9833	0.9896	0.9731	24	20	21.5	27	4	3388	583	1703	2286	6
262	728	3	13.00	12.93	0.07	1	0.07	0.9946	0.9922	0.9944	0.9866	23	19	20.4	25	6	3350	477	1447	1924	6
263	729	4	13.00	12.62	0.38	2	0.19	0.9708	0.9705	0.9852	0.9561	24	20	22.3	27	4	3868	671	1525	2196	6
264	730	5	13.00	12.00	1.00	5	0.20	0.9231	0.9131	0.9861	0.9004	21	17	18.3	23	4	3458	671	1458	2129	6
265	731	6	5.50	5.35	0.15	1	0.15	0.9727	0.9727	0.9923	0.9652	16	15	15.7	18	2	1095	398	250	648	6
266	801	7	5.50	5.32	0.18	1	0.18	0.9673	0.9667	0.9948	0.9617	16	15	15.7	18	1	1012	233	151	384	6
267	802	1	13.00	12.90	0.10	1	0.10	0.9923	0.9035	0.9945	0.8985	16	11	13.0	17	2	2752	203	1482	1685	6
268	803	2	13.00	12.80	0.20	2	0.10	0.9846	0.9576	0.9900	0.9480	18	15	16.5	21	2	3273	183	1319	1502	6
269	804	3	13.00	12.12	0.88	5	0.18	0.9323	0.9130	0.9878	0.9019	19	15	17.5	22	3	2777	635	1067	1702	6
270	805	4	13.00	12.67	0.33	4	0.08	0.9746	0.9375	0.9815	0.9202	18	14	15.0	19	3	2084	518	1110	1628	6
271	806	5	13.00	12.02	0.98	4	0.25	0.9246	0.9133	0.9868	0.9012	19	15	18.1	22	4	1858	407	1227	1634	6
272	807	6	5.50	5.38	0.12	1	0.12	0.9782	0.9788	0.9921	0.9711	23	20	22.2	23	0	1067	383	68	451	6
273	808	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9943	0.9943	24	23	24.0	25	0	825	382	63	445	6
274	809	1	13.00	13.00	0.00	0	0.00	1.0000	1.0000	0.9924	0.9924	25	23	24.2	27	4	1686	529	1268	1797	6
275	810	2	13.00	12.37	0.63	4	0.16	0.9515	0.9513	0.9777	0.9301	26	24	25.2	27	1	1839	432	1094	1526	6

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
276	811	3	13.00	11.95	1.05	2	0.53	0.9192	0.9192	0.9667	0.8886	26	23	24.3	28	3	1439	711	1052	1763	6
277	812	4	13.00	12.57	0.43	2	0.22	0.9669	0.9667	0.9911	0.9581	27	24	26.2	28	1	2620	400	1162	1562	6
278	813	5	13.00	12.60	0.40	1	0.40	0.9692	0.9692	0.9121	0.9421	28	26	26.9	29	4	2010	300	929	1229	6
279*	822	7	5.50	5.47	0.03	1	0.03	0.9945	0.9939	0.9963	0.9902	28	27	27.2	28	1	3104	0	1365	1365	6
280	823	1	13.00	11.57	1.43	5	0.29	0.8900	0.8897	0.9792	0.8712	26	18	22.2	29	8	2423	0	4986	4986	6
281	824	2	13.00	11.37	1.63	7	0.23	0.8746	0.8731	0.9787	0.8545	23	19	20.4	25	8	2862	0	10007	10007	6
282	825	3	13.00	10.22	2.78	10	0.28	0.7862	0.7711	0.9680	0.7464	19	15	17.0	22	4	2707	0	14108	14108	6
283	826	4	13.00	11.80	1.20	8	0.15	0.9077	0.8900	0.9695	0.8629	19	14	16.8	21	4	2913	0	17116	17116	6
284	827	5	13.00	12.45	0.55	6	0.09	0.9577	0.9577	0.9687	0.9277	25	21	23.3	26	2	3474	0	15694	15694	6
285	828	6	5.50	5.35	0.15	1	0.15	0.9727	0.9727	0.9779	0.9512	24	22	22.6	24	2	1218	0	2623	2623	6
286	829	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9880	0.9880	24	21	22.5	24	3	925	0	1930	1930	6
287	830	1	13.00	12.32	0.68	4	0.17	0.9477	0.9474	0.9807	0.9291	23	21	22.3	25	5	3396	0	15629	15629	6
288	831	2	13.00	12.12	0.88	8	0.11	0.9323	0.9282	0.9742	0.9043	24	19	21.1	28	10	3579	0	16008	16008	6
289	901	3	13.00	12.70	0.30	4	0.08	0.9769	0.9698	0.9786	0.9490	23	18	20.2	24	3	3666	0	15823	15823	6
290	902	4	13.00	11.97	1.03	7	0.15	0.9208	0.9205	0.9681	0.8911	25	21	22.7	28	6	3447	490	13487	13977	6
291	903	5	13.00	11.78	1.22	6	0.20	0.9062	0.9064	0.9731	0.8820	24	20	21.9	27	7	2963	809	10516	11325	6
292	904	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9980	0.9980	25	25	25.0	25	0	1187	67	945	1012	6
293	905	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9988	0.9988	25	25	25.0	25	0	1016	76	848	924	6
294	907	2	13.00	12.38	0.62	3	0.21	0.9523	0.9526	0.9912	0.9442	26	23	24.3	26	5	3066	520	12690	13210	6
295	908	3	13.00	12.57	0.43	6	0.07	0.9669	0.9640	0.9775	0.9423	25	20	22.3	26	6	3533	726	13049	13775	6
296	909	4	13.00	12.95	0.05	1	0.05	0.9962	0.9962	0.9783	0.9746	25	22	22.9	25	5	3310	357	12653	13010	6
297	910	5	13.00	12.82	0.18	2	0.09	0.9862	0.9850	0.9719	0.9573	22	18	20.3	25	5	2962	154	12725	12879	6
298	911	6	7.50	7.50	0.00	0	0.00	1.0000	1.0000	0.9871	0.9871	22	20	21.3	22	2	1859	1461	3943	5404	6
299	912	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9981	0.9981	22	22	22.0	22	0	822	126	977	1103	6
300	913	1	13.00	11.77	1.23	5	0.25	0.9054	0.9043	0.9623	0.8702	22	21	21.7	23	3	2677	262	12532	12794	6
301	914	2	13.00	12.37	0.63	2	0.31	0.9515	0.9477	0.9802	0.9289	21	19	20.3	22	4	2833	263	12303	12566	6
302	915	3	13.00	11.93	1.07	4	0.27	0.9177	0.9156	0.9770	0.8945	22	20	21.1	23	3	2858	248	12806	13054	6
303	916	4	13.25	12.10	1.15	5	0.23	0.9132	0.9110	0.9830	0.8955	23	16	19.1	23	7	2724	310	11496	11806	6
304	917	5	13.25	12.98	0.27	2	0.13	0.9796	0.9799	0.9893	0.9694	24	21	21.7	25	3	3292	345	12430	12775	6
305	918	6	7.50	7.42	0.08	1	0.08	0.9893	0.9889	0.9896	0.9786	23	22	22.3	24	0	1997	1893	3553	5446	6
306	919	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9892	0.9892	21	20	20.8	21	1	887	55	1178	1233	6
307	920	1	13.25	12.13	1.12	3	0.37	0.9155	0.9046	0.9693	0.8768	22	14	17.7	22	6	2762	495	11080	11575	6
308	921	2	13.25	10.70	2.55	3	0.85	0.8075	0.7884	0.9764	0.7698	18	15	16.4	21	3	2371	350	11352	11702	6
309	922	3	13.25	12.62	0.63	2	0.32	0.9525	0.9347	0.9705	0.9071	19	15	18.5	23	2	2763	377	13250	13627	6
310	923	4	13.25	12.83	0.42	4	0.10	0.9683	0.9600	0.9825	0.9491	21	16	19.9	22	5	2840	193	12904	13097	6
311	924	5	13.25	12.03	1.22	2	0.61	0.9079	0.9021	0.9814	0.8853	23	19	21.4	23	5	2838	158	10013	10171	6
312	925	6	5.50	5.38	0.12	1	0.12	0.9782	0.9788	0.9876	0.9667	24	23	23.5	24	1	1160	162	1060	1222	6
313	926	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9912	0.9912	23	22	22.5	23	0	728	112	770	882	6
314	927	1	13.25	12.80	0.45	3	0.15	0.9660	0.9600	0.9867	0.9532	22	21	21.6	22	2	2897	152	12711	12863	6
315	928	2	13.25	12.35	0.90	3	0.30	0.9321	0.9286	0.9880	0.9175	21	18	19.0	24	5	2925	174	12068	12242	6
316	929	3	13.25	12.43	0.82	3	0.27	0.9381	0.9340	0.9862	0.9211	21	17	19.7	24	5	3008	126	12621	12747	6
317	930	4	13.25	12.95	0.30	4	0.08	0.9774	0.9756	0.9838	0.9598	22	18	19.8	23	3	2964	193	11896	12089	6
318	1001	5	13.25	11.27	1.98	3	0.66	0.8506	0.8185	0.9851	0.8063	18	15	16.4	23	5	2570	182	10729	10911	6
319	1002	6	7.50	7.50	0.00	0	0.00	1.0000	1.0000	0.9912	0.9912	18	16	16.9	18	0	1823	1439	4205	5644	6
320	1003	7	5.50	5.37	0.13	1	0.13	0.9764	0.9758	0.9957	0.9716	18	15	15.8	18	1	746	37	1793	1830	6
321	1004	1	13.25	13.25	0.00	0	0.00	1.0000	0.9957	0.9878	0.9836	20	17	19.3	21	1	3281	306	13474	13780	6
322	1005	2	13.25	12.82	0.43	3	0.14	0.9675	0.9673	0.9882	0.9559	22	20	21.2	23	5	2988	287	12345	12632	6
323	1006	3	13.25	11.75	1.50	3	0.50	0.8868	0.8859	0.9717	0.8608	24	20	21.9	25	4	2770	296	12518	12814	6
324	1007	4	13.25	13.02	0.23	1	0.23	0.9826	0.9824	0.9905	0.9731	23	20	21.5	23	4	2866	451	10869	11320	6
325	1008	5	13.25	13.00	0.25	3	0.08	0.9811	0.9785	0.9883	0.9671	22	19	21.1	26	6	2998	431	10482	10913	6
326	1009	6	5.50	5.15	0.35	3	0.12	0.9364	0.9364	0.9425	0.8826	21	19	20.1	22	3	863	60	1284	1344	6
327	1010	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9880	0.9880	17	15	15.7	18	2	667	60	1184	1244	6
328	1011	1	13.75	12.82	0.93	3	0.31	0.9324	0.9164	0.9829	0.9007	18	15	17.1	22	6	2801	277	12278	12555	6
329	1012	2	13.75	13.42	0.33	2	0.17	0.9760	0.9507	0.9868	0.9382	19	14	16.1	21	4	2779	285	12488	12773	6
330	1013	3	13.75	12.92	0.83	3	0.28	0.9396	0.9263	0.9803	0.9081	19	15	18.3	20	2	2683	252	11064	11316	6

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
331	1014	4	13.75	9.97	3.78	6	0.63	0.7251	0.7215	0.9320	0.6724	21	18	20.7	22	3	1977	198	7821	8019	6
332	1015	5	13.75	13.58	0.17	1	0.17	0.9876	0.9862	0.9884	0.9748	22	20	21.4	23	1	3044	301	10444	10745	6
333	1016	6	5.50	1.25	4.25	1	4.25	0.2273	0.2273	0.9627	0.2188	22	22	22.0	22	0	214	21	312	333	6
334	1017	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9974	0.9974	23	19	21.3	24	1	608	31	897	928	6
335	1018	1	13.75	12.98	0.77	4	0.19	0.9440	0.9366	0.9863	0.9238	21	19	19.5	21	3	2573	343	11961	12304	6
336	1019	2	13.75	13.28	0.47	4	0.12	0.9658	0.9661	0.9832	0.9499	23	19	21.0	26	6	2755	342	11821	12163	6
337	1020	3	13.75	13.75	0.00	0	0.00	1.0000	1.0000	0.9950	0.9950	23	21	22.2	25	1	2895	174	12124	12298	6
338	1021	4	13.75	13.38	0.37	3	0.12	0.9731	0.9733	0.9872	0.9608	27	20	22.5	28	9	2667	179	11832	12011	6
339	1022	5	13.75	12.48	1.27	4	0.32	0.9076	0.9079	0.9837	0.8931	25	22	23.7	27	4	2752	165	10533	10698	6
340	1023	6	7.50	6.97	0.53	1	0.53	0.9293	0.9289	0.9874	0.9172	25	22	23.4	25	1	1910	692	6024	6716	6
341	1024	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9978	0.9978	24	22	23.0	24	2	727	53	1345	1398	6
342	1025	1	13.25	12.32	0.93	7	0.13	0.9298	0.9281	0.9823	0.9117	22	21	21.3	23	0	2714	0	12494	12494	6
343	1026	2	13.25	13.02	0.23	1	0.23	0.9826	0.9744	0.9953	0.9698	20	18	19.2	24	2	2711	0	12254	12254	6
344	1027	3	13.25	12.47	0.78	2	0.39	0.9411	0.9188	0.9879	0.9077	18	13	15.8	23	6	2647	0	12694	12694	6
345	1028	4	13.25	12.33	0.92	3	0.31	0.9308	0.9211	0.9883	0.9104	21	15	18.6	21	0	2735	0	0	11146	6
346	1029	5	13.25	13.13	0.12	1	0.12	0.9912	0.9815	0.9943	0.9759	21	17	19.1	23	0	2791	0	0	10082	6
347	1030	6	5.50	5.22	0.28	2	0.14	0.9485	0.9433	0.9846	0.9288	21	20	20.3	21	0	746	0	0	1259	6
348	1031	7	5.50	5.37	0.13	1	0.13	0.9758	0.9758	0.9806	0.9569	22	21	21.8	22	0	577	0	0	594	6
349	1101	1	13.25	12.37	0.88	4	0.22	0.9333	0.9299	0.9837	0.9147	22	19	20.8	22	0	2748	0	0	13128	6
350	1102	2	13.25	12.92	0.33	3	0.11	0.9748	0.9731	0.9908	0.9641	22	19	20.5	23	0	2600	0	0	12207	6
351	1103	3	13.25	12.88	0.37	3	0.12	0.9723	0.9723	0.9961	0.9685	25	22	23.0	25	0	2852	0	0	12190	6
352	1104	4	13.25	11.65	1.60	6	0.27	0.8792	0.8748	0.9830	0.8599	23	19	20.5	23	0	2351	0	0	10443	6
353	1105	5	13.25	12.68	0.57	3	0.19	0.9572	0.9555	0.9857	0.9419	22	20	21.4	24	0	2580	0	0	10306	6
354	1106	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	23	22	22.5	23	0	789	0	0	1380	6
355	1107	7	5.50	5.40	0.10	1	0.10	0.9818	0.9818	0.9924	0.9743	23	22	22.6	23	0	633	0	0	806	6
356	1108	1	13.25	11.10	2.15	12	0.18	0.8377	0.8335	0.9740	0.8118	22	18	19.6	22	0	2278	0	0	12327	6
357	1109	2	13.25	13.25	0.00	0	0.00	1.0000	0.9836	0.9989	0.9825	20	16	17.9	22	0	2796	0	0	12055	6
358	1110	3	13.25	13.25	0.00	0	0.00	1.0000	0.9930	0.9983	0.9913	21	19	19.9	22	0	2753	0	0	12441	6
359	1111	4	13.25	13.05	0.20	1	0.20	0.9849	0.9849	0.9923	0.9773	22	20	21.1	23	0	2697	0	0	11607	6
360	1112	5	13.25	13.05	0.20	1	0.20	0.9849	0.9815	0.9931	0.9747	22	19	20.6	22	0	2545	0	0	10248	6
361	1113	6	5.50	5.50	0.00	0	0.00	1.0000	0.9896	1.0000	0.9896	20	19	19.8	20	0	649	0	0	867	6
362	1114	7	5.50	5.25	0.25	1	0.25	0.9545	0.9504	0.9866	0.9377	21	20	20.7	21	0	597	0	0	815	6
363	1115	1	15.25	15.05	0.20	2	0.10	0.9869	0.9850	0.9900	0.9751	21	18	19.5	23	0	2964	0	0	12728	6
364	1116	2	13.25	10.88	2.37	6	0.39	0.8214	0.7959	0.9673	0.7699	19	14	17.4	21	0	2010	0	0	9505	6
365	1117	3	13.25	12.83	0.42	4	0.10	0.9535	0.9443	0.9792	0.9247	20	16	18.4	20	0	2621	0	0	11914	6
366	1118	4	13.25	13.05	0.20	2	0.10	0.9849	0.9688	0.9940	0.9630	18	16	17.4	19	0	2674	0	0	11378	6
367	1119	5	13.25	13.25	0.00	0	0.00	1.0000	0.9895	0.9976	0.9871	20	18	18.5	20	0	2687	0	0	11533	6
368	1120	6	7.50	7.32	0.18	1	0.18	0.9756	0.9648	0.9924	0.9575	21	19	19.9	21	0	1690	0	0	5920	6
369	1121	7	5.50	4.88	0.62	1	0.62	0.8879	0.8775	0.9920	0.8705	21	20	20.0	21	0	598	0	0	839	6
370	1122	1	13.25	12.53	0.72	4	0.18	0.9459	0.9234	0.9903	0.9145	19	15	16.1	20	0	2317	0	0	9421	6
371	1123	2	13.25	12.97	0.28	2	0.14	0.9786	0.9474	0.9915	0.9393	16	13	14.7	18	0	2249	0	0	5504	6
372	1124	3	9.75	9.08	0.67	1	0.67	0.9316	0.8762	0.9955	0.8723	16	14	14.8	17	0	711	0	0	371	6
373	1128	7	5.50	5.13	0.37	2	0.19	0.9333	0.6770	0.9860	0.6675	14	8	9.5	15	0	232	0	0	148	6
374	1129	1	13.25	12.53	0.72	5	0.14	0.9459	0.9218	0.9924	0.9148	17	13	15.8	17	0	2311	0	0	11869	6
375	1130	2	13.25	12.42	0.83	5	0.17	0.9371	0.8677	0.9851	0.8548	14	10	12.6	19	0	2146	0	0	11347	6
376	1201	3	13.25	12.32	0.93	2	0.46	0.9296	0.8884	0.9888	0.8784	16	11	14.1	18	0	2432	0	0	10997	6
377	1202	4	13.25	11.76	1.47	2	0.73	0.8893	0.8438	0.9867	0.8326	16	13	13.9	17	0	2173	0	0	9442	6
378	1203	5	13.25	11.35	1.90	3	0.63	0.8566	0.7796	0.9892	0.7712	15	6	12.6	16	0	2225	0	0	7878	6
379	1204	6	5.50	4.90	0.60	2	0.30	0.8909	0.7738	0.9764	0.7555	14	12	12.9	14	0	814	0	0	1583	6
380	1205	7	5.50	5.50	0.00	0	0.00	1.0000	0.9106	1.0000	0.9106	15	14	14.2	16	0	639	0	0	740	6
381	1206	1	13.25	11.85	1.40	6	0.23	0.8943	0.8322	0.9870	0.8214	16	12	13.8	18	0	2336	0	0	11179	6
382	1207	2	13.25	13.22	0.03	1	0.03	0.9975	0.9629	0.9970	0.9600	18	13	15.9	20	0	2624	0	0	11663	6
383	1208	3	13.25	12.52	0.73	3	0.24	0.9447	0.9000	0.9918	0.8926	16	10	14.6	18	0	2540	0	0	10876	6
384	1209	4	13.25	12.85	0.40	3	0.13	0.9698	0.9479	0.9969	0.9450	17	15	16.2	19	0	2607	0	0	10652	6
385	1210	5	13.25	13.25	0.00	0	0.00	1.0000	0.9780	0.9975	0.9756	18	16	16.5	19	0	2605	0	0	9415	6

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
386	1211	6	5.50	5.50	0.00	0	0.00	1.0000	0.9917	0.9956	0.9873	21	20	20.2	21	0	724	0	0	1084	6
387	1212	7	5.50	5.37	0.13	1	0.13	0.9758	0.9620	0.9890	0.9517	21	19	19.8	21	0	587	0	0	593	6
388	1213	1	14.25	11.75	2.50	6	0.42	0.8246	0.8105	0.9859	0.7991	20	16	17.4	22	0	1933	0	0	6230	6
389	1214	2	14.25	14.07	0.18	2	0.09	0.9871	0.9751	0.9909	0.9662	21	17	18.6	21	0	2422	0	0	5288	6
390	1215	3	14.25	14.00	0.25	2	0.13	0.9825	0.9734	0.9897	0.9634	21	18	18.7	22	0	2167	0	0	6165	6
391	1216	4	14.25	14.25	0.00	0	0.00	1.0000	0.9935	1.0000	0.9935	21	19	19.9	22	0	1970	0	0	4592	6
392	1217	5	14.25	14.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	23	22	22.1	23	0	1912	0	0	4816	6
393	1218	6	7.75	7.75	0.00	0	0.00	1.0000	0.9926	0.9989	0.9915	22	20	20.9	22	0	1497	0	0	1694	6
394	1219	7	5.50	5.50	0.00	0	0.00	1.0000	0.9784	1.0000	0.9784	20	17	18.6	21	0	208	0	0	93	6
395	1220	1	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	15	16.5	19	0	1238	0	0	554	6
396	1221	2	13.25	10.95	2.30	5	0.46	0.8264	0.8057	0.9969	0.8038	15	5	8.8	17	0	1033	0	0	545	6
397	1222	3	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9982	0.9982	18	14	17.3	18	0	911	0	0	489	6
398	102	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	12	13.3	17	0	187	0	0	156	7
399	103	1	13.25	12.58	0.67	4	0.17	0.9497	0.9327	0.9987	0.9315	18	17	17.2	19	0	1238	0	0	1170	7
400	104	2	13.25	11.10	2.15	3	0.72	0.8377	0.8266	0.9958	0.8231	19	17	17.9	20	0	1145	0	0	2123	7
401	105	3	13.25	11.93	1.32	5	0.26	0.9006	0.8913	0.9862	0.8790	20	16	18.0	20	0	2208	0	0	4465	7
402	106	4	13.25	10.80	2.45	2	1.22	0.8151	0.8000	0.9843	0.7874	19	16	17.3	20	0	2134	0	0	11673	7
403	107	5	13.25	10.97	2.28	5	0.46	0.8277	0.8068	0.9769	0.7882	19	11	16.4	20	0	2352	0	0	9729	7
404	108	6	5.50	5.27	0.23	1	0.23	0.9576	0.9576	0.9978	0.9555	13	12	12.1	13	0	713	0	0	1277	7
405	109	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9880	0.9880	18	12	16.8	18	0	643	0	0	958	7
406	110	1	5.60	4.00	1.60	1	1.60	0.7143	0.7143	0.9985	0.7132	20	18	19.0	20	0	1100	0	0	4804	7
407	111	2	13.25	0.00	13.25	1	13.25	0.0000	0.0000	0.0000	0.0000	0	0	0.0	0	0	0	0	0	0	7
408	112	3	3.50	2.75	0.75	2	0.38	0.7887	0.7887	0.9760	0.7668	18	13	16.1	18	0	400	0	0	900	7
409	113	4	13.25	11.30	1.95	5	0.39	0.8528	0.7952	0.9928	0.7895	16	9	13.6	18	0	1991	0	0	8169	7
410	114	5	13.25	13.18	0.07	1	0.07	0.9950	0.9788	0.9967	0.9756	18	15	16.7	19	0	2914	0	0	10801	7
411	115	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	18	15	16.0	18	0	748	0	0	1094	7
412	116	7	5.50	4.02	1.48	7	0.21	0.7303	0.7273	0.9533	0.6933	18	16	16.0	18	0	575	0	0	417	7
413	117	1	13.25	0.00	13.25	0	13.25	0.0000	0.0000	0.0000	0.0000	0	0	0.0	0	0	419	0	0	0	7
414	118	2	13.25	4.60	8.65	2	4.32	0.3472	0.2877	0.9913	0.2654	13	0	3.5	13	0	738	0	0	1508	7
415	119	3	13.25	12.52	0.73	4	0.18	0.9447	0.8862	0.9906	0.8779	16	10	13.6	19	0	2553	0	0	9703	7
416	120	4	13.25	13.08	0.17	2	0.08	0.9874	0.9671	0.9945	0.9618	19	15	17.1	19	0	2904	0	0	10861	7
417	121	5	13.25	13.07	0.18	1	0.18	0.9862	0.9594	0.9911	0.9509	18	15	15.9	19	0	2701	0	0	9393	7
418	122	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9984	0.9984	17	16	16.4	17	0	1003	0	0	1047	7
419	123	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9983	0.9983	14	13	13.3	14	0	915	0	0	617	7
420	124	1	13.25	12.30	0.95	3	0.32	0.9283	0.9094	0.9929	0.9029	17	16	16.6	20	0	2710	0	0	10947	7
421	125	2	13.25	13.25	0.00	0	0.00	1.0000	0.9868	1.0000	0.9868	19	15	18.1	20	0	2791	0	0	11196	7
422	126	3	13.25	13.05	0.20	1	0.20	0.9849	0.9608	0.9932	0.9543	18	15	16.4	19	0	2805	0	0	10902	7
423	127	4	13.25	12.27	0.98	5	0.20	0.9258	0.8834	0.9798	0.8656	16	8	14.2	18	0	2381	0	0	10955	7
424	128	5	13.25	11.73	1.52	6	0.25	0.8855	0.8705	0.9733	0.8473	19	15	16.7	20	0	2339	0	0	6270	7
425	129	6	5.50	5.02	0.48	2	0.24	0.9121	0.9121	0.9843	0.8978	14	12	12.9	15	0	510	0	0	617	7
426	130	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	14	14.0	14	0	710	0	0	418	7
427	131	1	13.25	13.03	0.22	1	0.22	0.9836	0.9667	0.9972	0.9640	18	16	17.2	19	0	2885	0	0	10910	7
428	201	2	13.25	12.82	0.43	3	0.14	0.9673	0.9454	0.9916	0.9375	19	16	17.3	20	0	2669	0	0	10481	7
429	202	3	13.25	12.80	0.45	3	0.15	0.9660	0.9522	0.9952	0.9476	21	17	18.4	21	0	2651	0	0	10691	7
430	203	4	13.25	13.07	0.18	2	0.09	0.9862	0.9750	0.9930	0.9682	19	16	18.1	20	0	2277	0	0	10350	7
431	204	5	13.25	13.25	0.00	0	0.00	1.0000	0.9892	0.9989	0.9881	19	17	18.3	19	0	2810	0	0	9336	7
432	205	6	5.50	5.22	0.28	1	0.28	0.9485	0.9485	0.9976	0.9462	18	17	17.4	19	0	655	0	0	1077	7
433	206	7	5.50	5.25	0.25	2	0.13	0.9545	0.9545	0.9945	0.9493	19	18	18.9	19	0	583	0	0	450	7
434	207	1	13.25	13.10	0.15	1	0.15	0.9887	0.9725	0.9959	0.9685	18	14	17.4	20	0	2763	0	0	10919	7
435	208	2	13.25	1.18	0.18	5	0.24	0.9107	0.9011	0.9872	0.8896	20	16	18.0	21	0	2742	0	0	10273	7
436	209	3	13.25	12.72	0.53	5	0.11	0.9598	0.9471	0.9812	0.9293	19	16	17.4	22	0	2812	0	0	11313	7
437	210	4	13.25	12.88	0.37	2	0.19	0.9723	0.9680	0.9975	0.9656	27	18	20.3	23	0	2560	0	0	10595	7
438	211	5	13.25	13.08	0.17	1	0.17	0.9874	0.9840	0.9948	0.9789	21	20	20.5	23	0	2811	0	0	9923	7
439	212	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9980	0.9980	21	20	20.3	21	0	793	0	0	1391	7
440	213	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	17	17.6	19	0	523	0	0	578	7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
441	214	1	13.25	13.17	0.08	2	0.04	0.9937	0.9858	0.9978	0.9836	19	17	18.6	20	0	2890	0	0	11490	7
442	215	2	13.25	13.25	0.00	0	0.00	1.0000	0.9948	0.9994	0.9942	20	17	19.1	20	0	2782	0	0	10664	7
443	216	3	13.25	12.57	0.68	4	0.17	0.9484	0.9432	0.9895	0.9333	20	17	18.9	21	0	3046	0	0	10781	7
444	217	4	13.25	12.73	0.52	5	0.10	0.9610	0.9447	0.9835	0.9291	18	15	17.2	21	0	2618	0	0	10106	7
445	218	5	13.25	12.52	0.73	4	0.18	0.9447	0.9350	0.9903	0.9259	20	17	18.3	20	0	2972	0	0	8475	7
446	219	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9977	0.9977	19	18	18.8	19	0	703	0	0	1860	7
447	220	7	5.50	4.88	0.62	3	0.21	0.8879	0.8879	1.0000	0.8879	18	18	18.0	18	0	285	0	0	392	7
448	222	2	13.25	13.10	0.15	3	0.05	0.9887	0.9638	0.9900	0.9542	17	15	16.1	18	0	2722	0	0	10534	7
449	223	3	13.25	13.07	0.18	1	0.18	0.9862	0.9790	0.9941	0.9732	19	18	19.0	19	0	2970	0	0	10942	7
450	224	4	13.25	11.98	1.27	5	0.25	0.9044	0.8916	0.9951	0.8872	18	14	16.7	20	0	2635	0	0	9964	7
451	225	5	13.25	12.55	0.70	2	0.35	0.9472	0.9421	0.9924	0.9349	21	17	19.3	21	0	2944	0	0	10410	7
452	226	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	18	18.5	19	0	723	0	0	1581	7
453	227	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	18	18.3	19	0	680	0	0	994	7
454	228	1	13.25	12.60	0.65	3	0.22	0.9509	0.9377	0.9931	0.9312	18	15	16.7	18	0	2543	0	0	10975	7
455	301	2	13.25	12.00	1.25	2	0.63	0.9057	0.8854	0.9922	0.8785	17	14	15.7	17	0	2450	0	0	9082	7
456	302	3	13.25	13.18	0.07	1	0.07	0.9950	0.9745	0.9972	0.9718	18	14	16.5	18	0	2901	0	0	10715	7
457	303	4	13.25	12.83	0.42	2	0.21	0.9686	0.9498	0.9968	0.9468	18	16	16.8	18	0	2479	0	0	9800	7
458	304	5	13.25	12.58	0.67	1	0.67	0.9497	0.9381	0.9978	0.9360	19	17	17.7	19	0	2155	0	0	5872	7
459	305	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	16	16.0	16	0	367	0	0	467	7
460	306	7	5.50	5.35	0.15	2	0.08	0.9727	0.9727	0.9931	0.9660	15	14	14.6	15	0	232	0	0	445	7
461	307	1	13.25	12.77	0.48	1	0.48	0.9635	0.9635	0.9884	0.9523	16	14	14.6	17	0	827	0	0	688	7
462	308	2	13.25	13.02	0.23	2	0.12	0.9824	0.9824	0.9924	0.9749	17	14	15.2	17	0	1053	0	0	823	7
463	313	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9907	0.9907	15	13	14.0	15	0	691	0	0	219	7
464	314	1	13.25	12.88	0.37	3	0.12	0.9723	0.9075	0.9957	0.9036	14	12	12.7	16	0	2223	0	0	10378	7
465	315	2	13.25	12.05	1.20	4	0.30	0.9094	0.8755	0.9843	0.8618	16	14	14.9	17	0	2344	0	0	9890	7
466	316	3	13.25	12.95	0.30	1	0.30	0.9774	0.9649	0.9994	0.9643	19	17	18.2	20	0	2701	0	0	9891	7
467	317	4	13.25	13.25	0.00	0	0.00	1.0000	0.9902	1.0000	0.9902	20	18	19.2	20	0	2731	0	0	9587	7
468	318	5	13.25	12.62	0.63	3	0.21	0.9522	0.9502	0.9905	0.9412	21	18	20.0	23	0	2522	0	0	8748	7
469	319	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	22	22	22.0	22	0	696	0	0	1230	7
470	320	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9944	0.9944	22	21	21.2	22	0	577	0	0	599	7
471	321	1	13.25	12.75	0.50	3	0.17	0.9623	0.9588	0.9845	0.9439	22	18	19.9	23	0	2787	0	0	10227	7
472	322	2	13.25	13.08	0.17	1	0.17	0.9874	0.9857	0.9952	0.9810	21	17	19.9	23	0	2680	0	0	9698	7
473	323	3	13.25	12.85	0.40	3	0.13	0.9698	0.9612	0.9909	0.9525	19	16	18.7	21	0	2630	0	0	10518	7
474	324	4	13.25	12.75	0.50	2	0.25	0.9623	0.9383	0.9922	0.9310	18	15	15.8	20	0	2474	0	0	10248	7
475	325	5	13.25	12.48	0.77	4	0.19	0.9419	0.9160	0.9880	0.9050	17	13	15.3	19	0	2285	0	0	8422	7
476	326	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	20	20	20.0	20	0	866	0	0	1040	7
477	327	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	18	18.3	19	0	797	0	0	677	7
478	328	1	13.25	13.13	0.12	1	0.12	0.9912	0.9877	0.9942	0.9820	21	19	20.0	22	0	2771	0	0	10134	7
479	329	2	13.25	10.77	2.48	7	0.35	0.8126	0.8089	0.9784	0.7914	20	14	17.4	21	0	2298	0	0	8217	7
480	330	3	13.25	11.72	1.53	8	0.19	0.8843	0.8663	0.9793	0.8484	18	14	16.5	20	0	2473	0	0	9647	7
481	331	4	13.25	12.88	0.38	2	0.19	0.9723	0.9697	0.9928	0.9627	21	18	20.4	24	0	2683	0	0	9468	7
482	401	5	13.25	13.13	0.12	1	0.12	0.9912	0.9756	0.9931	0.9689	20	15	17.0	21	0	2552	0	0	9207	7
483	402	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9962	0.9962	17	17	17.0	17	0	852	0	0	1123	7
484	403	7	5.50	5.30	0.20	1	0.20	0.9636	0.9636	0.9911	0.9550	18	15	17.3	18	0	719	0	0	782	7
485	404	1	13.25	13.25	0.00	0	0.00	1.0000	0.9885	1.0000	0.9885	19	18	18.5	21	0	2744	0	0	11068	7
486	405	2	13.25	13.15	0.10	1	0.10	0.9925	0.9755	0.9951	0.9707	18	15	16.9	21	0	2597	0	0	9688	7
487	406	3	13.25	13.25	0.00	0	0.00	1.0000	0.9751	0.9970	0.9722	17	15	16.2	18	0	2630	0	0	9832	7
488	107	4	13.25	12.55	0.70	2	0.35	0.9472	0.9217	0.9870	0.9097	19	15	16.4	19	0	2578	0	0	9249	7
489	408	5	13.25	13.25	0.00	0	0.00	1.0000	0.9830	1.0000	0.9830	18	17	17.2	18	0	2517	0	0	5946	7
490	409	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	18	18	18.0	18	0	677	0	0	693	7
491	410	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	17	18.2	19	0	375	0	0	199	7
492	411	2	13.25	13.13	0.12	1	0.12	0.9912	0.9701	0.9607	0.9320	17	15	16.2	19	0	2323	0	0	9627	7
493	413	3	13.25	12.92	0.33	2	0.17	0.9748	0.9624	0.9932	0.9559	19	17	17.9	21	0	2604	0	0	9480	7
494	414	4	13.25	13.25	0.00	0	0.00	1.0000	0.9957	0.9982	0.9939	20	18	19.5	21	0	2725	0	0	9050	7
495	415	5	13.25	12.70	0.55	1	0.55	0.9585	0.9542	0.9950	0.9494	20	17	19.4	22	0	2537	0	0	7798	7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
496	416	6	5.50	5.35	0.15	1	0.15	0.9727	0.9727	0.9976	0.9704	16	12	13.9	16	0	665	0	0	1059	7
497	417	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9974	0.9974	13	13	13.0	13	0	611	0	0	675	7
498	418	1	13.25	13.15	0.10	1	0.10	0.9925	0.9515	0.9987	0.9503	16	12	14.9	17	0	2371	0	0	9744	7
499	419	2	13.25	13.25	0.00	0	0.00	1.0000	0.9730	0.9988	0.9718	17	15	15.7	18	0	2702	0	0	9582	7
500	420	3	13.25	13.15	0.10	1	0.10	0.9925	0.9800	0.9969	0.9770	19	16	18.0	20	0	2617	0	0	9509	7
501	421	4	13.25	13.03	0.22	2	0.11	0.9836	0.9810	0.9994	0.9804	21	20	20.2	21	0	2509	0	0	9099	7
502	422	5	13.25	13.00	0.25	1	0.25	0.9811	0.9785	0.9958	0.9744	22	19	20.6	24	0	2690	0	0	8207	7
503	423	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	21	21	21.0	21	0	664	0	0	854	7
504	424	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	21	17	18.4	21	0	683	0	0	402	7
505	425	1	13.25	12.57	0.68	3	0.23	0.9484	0.9379	0.9881	0.9267	19	17	18.4	21	0	2292	0	0	9822	7
506	426	2	13.25	12.73	0.52	1	0.52	0.9610	0.9567	0.9957	0.9526	21	20	20.2	22	0	2580	0	0	8431	7
507	427	3	13.25	13.25	0.00	0	0.00	1.0000	0.9921	0.9936	0.9858	21	19	19.5	21	0	2752	0	0	8988	7
508	428	4	13.25	11.95	1.30	3	0.43	0.9019	0.8980	0.9866	0.8860	21	18	19.8	23	0	2148	0	0	7228	7
509	429	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	24	21	22.6	24	0	2597	0	0	8413	7
510	430	6	5.50	5.28	0.22	2	0.11	0.9606	0.9606	0.9955	0.9563	22	20	21.4	23	0	718	0	0	1270	7
511	501	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9945	0.9945	24	21	22.8	24	0	639	0	0	640	7
512	502	1	14.25	14.25	0.00	0	0.00	1.0000	1.0000	0.9924	0.9924	25	24	24.2	25	0	2307	0	0	5172	7
513	503	2	14.25	13.73	0.52	4	0.13	0.9637	0.9637	0.9883	0.9524	24	21	22.6	26	0	2197	0	0	5209	7
514	504	3	14.25	14.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	23	22	22.4	23	0	1684	0	0	4223	7
515	505	4	14.25	14.25	0.00	0	0.00	1.0000	1.0000	0.9991	0.9991	25	24	24.5	26	0	1792	0	0	4858	7
516	506	5	13.25	12.48	0.77	2	0.38	0.9421	0.9421	0.9899	0.9326	24	21	23.1	24	0	1432	0	0	2761	7
517	507	6	7.75	7.75	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	17	15	16.5	17	0	899	0	0	1488	7
518	508	7	5.50	5.38	0.12	1	0.12	0.9788	0.9788	1.0000	0.9788	17	12	15.3	17	0	290	0	0	323	7
519	512	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9954	0.9954	14	11	13.2	15	0	1398	0	0	605	7
520	513	5	13.25	13.08	0.17	1	0.17	0.9874	0.9874	0.9924	0.9799	14	12	13.5	14	0	845	0	0	570	7
521	514	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9964	0.9964	15	14	14.1	15	0	441	0	0	487	7
522	515	7	7.50	7.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	14	14.4	15	0	763	0	0	758	7
523	516	1	13.25	13.17	0.08	1	0.08	0.9937	0.9937	0.9989	0.9926	16	12	14.5	17	0	1417	0	0	901	7
524	517	2	13.25	13.22	0.03	1	0.03	0.9975	0.9975	0.9942	0.9917	20	19	18.6	20	0	1388	0	0	1405	7
525	518	3	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9981	0.9981	22	21	21.9	22	0	1727	0	0	1447	7
526	519	4	13.25	12.92	0.33	2	0.17	0.9748	0.9748	0.9913	0.9663	25	16	18.9	25	0	1728	0	0	2260	7
527	520	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9962	0.9962	24	12	19.1	24	0	2346	0	0	1583	7
528	521	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	14	14.0	14	0	662	0	0	411	7
529	522	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	13	12	12.7	13	0	246	0	0	206	7
530	523	1	13.25	13.22	0.03	1	0.03	0.9975	0.9975	0.9930	0.9905	13	12	12.5	13	0	1144	0	0	2058	7
531	524	2	13.25	12.85	0.40	2	0.20	0.9698	0.9698	0.9965	0.9664	15	11	13.4	15	0	1353	0	0	1765	7
532	525	3	13.25	13.08	0.17	1	0.17	0.9874	0.9858	0.9935	0.9794	13	11	12.6	17	0	1226	0	0	1749	7
533	526	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	13	13.6	14	0	1425	0	0	1843	7
534	527	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	13	14.4	15	0	1452	0	0	1598	7
535	528	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9941	0.9941	15	15	15.0	15	0	410	0	0	238	7
536	529	7	5.50	5.38	0.12	1	0.12	0.9788	0.9788	0.9956	0.9745	14	14	14.0	14	0	397	0	0	296	7
537	531	2	13.25	13.07	0.18	2	0.09	0.9862	0.9823	0.9927	0.9751	15	11	12.8	18	0	1231	0	0	1396	7
538	601	3	13.25	13.22	0.03	1	0.03	0.9975	0.9975	0.9988	0.9963	15	13	14.1	17	0	1444	0	0	1344	7
539	602	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9987	0.9987	14	14	14.0	14	0	1405	0	0	1298	7
540	603	5	13.25	13.00	0.25	1	0.25	0.9811	0.9811	0.9973	0.9785	17	16	16.4	17	0	1447	0	0	1196	7
541	604	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	15	15.0	15	0	431	0	0	292	7
542	605	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	14	14.0	15	0	231	0	0	179	7
543	606	1	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9957	0.9957	15	12	13.8	16	0	1203	0	0	1152	7
544	607	2	13.25	13.13	0.12	1	0.12	0.9912	0.9912	0.9977	0.9889	15	12	13.2	15	0	1387	0	0	1179	7
545	608	3	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	13	14.0	14	0	1447	0	0	1208	7
546	609	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	14	14.0	14	0	1492	0	0	985	7
547	610	5	13.25	12.65	0.60	2	0.30	0.9547	0.9547	0.9920	0.9471	16	14	14.7	16	0	1285	0	0	1083	7
548	611	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	15	15.3	16	0	360	0	0	232	7
549	612	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9890	0.9890	16	15	15.7	16	0	356	0	0	188	7
550	613	1	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9985	0.9985	17	16	16.7	17	0	1157	0	0	1458	7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
551	614	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	14	15.1	16	0	1334	0	0	1292	7
552	615	3	13.25	13.07	0.18	1	0.18	0.9862	0.9862	0.9973	0.9835	14	12	13.5	14	0	1282	0	0	1438	7
553	616	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9975	0.9975	15	12	13.9	15	0	1354	0	0	1458	7
554	617	5	13.25	13.18	0.07	1	0.07	0.9950	0.9950	0.9972	0.9922	14	13	13.5	15	0	1231	0	0	1235	7
555	618	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	14	14.0	14	0	428	0	0	241	7
556	619	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	13	12	12.7	13	0	298	0	0	237	7
557	620	1	13.25	13.03	0.22	3	0.07	0.9836	0.9799	0.9935	0.9735	13	11	12.3	14	0	1283	0	0	1847	7
558	621	2	13.25	12.88	0.37	2	0.18	0.9723	0.9723	0.9960	0.9684	14	12	12.8	14	0	1302	0	0	2012	7
559	622	3	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	12	13.0	14	0	1391	0	0	1894	7
560	623	4	13.25	13.18	0.07	1	0.07	0.9950	0.9950	0.9937	0.9887	16	14	14.9	16	0	1325	0	0	1487	7
561	624	5	13.25	13.15	0.10	1	0.10	0.9925	0.9913	1.0000	0.9913	13	12	12.8	14	0	1282	0	0	1329	7
562	625	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9901	0.9901	13	13	13.0	13	0	375	0	0	332	7
563	626	7	5.50	5.32	0.18	1	0.18	0.9667	0.9667	0.9888	0.9361	13	11	12.2	13	0	500	0	0	265	7
564	627	1	13.25	13.25	0.00	0	0.00	1.0000	0.9906	0.9988	0.9894	14	10	12.6	14	0	1356	0	0	1396	7
565	628	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	14	13.7	15	0	1320	0	0	1245	7
566	629	3	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	15	15.9	16	0	1376	0	0	1388	7
567	630	4	13.25	13.12	0.13	1	0.13	0.9899	0.9899	0.9988	0.9887	17	14	15.1	17	0	1383	0	0	1371	7
568	701	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	16	16.0	16	0	1394	0	0	1509	7
569	702	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	15	15.0	15	0	440	0	0	384	7
570	703	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	14	14.7	15	0	494	0	0	294	7
571	705	2	13.25	13.15	0.10	1	0.10	0.9925	0.9925	0.9987	0.9912	14	12	12.6	15	0	1294	0	0	1635	7
572	706	3	13.25	12.92	0.33	3	0.11	0.9728	0.9670	0.9911	0.9584	14	11	12.6	14	0	1375	0	0	1728	7
573	707	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	12	12.7	15	0	1386	0	0	1666	7
574	708	5	13.25	12.93	0.32	2	0.16	0.9761	0.9761	0.9961	0.9722	14	12	12.6	14	0	1310	0	0	1248	7
575	709	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	14	14.2	15	0	368	0	0	355	7
576	710	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	13	13	13.0	13	0	480	0	0	453	7
577	711	1	13.25	13.02	0.23	1	0.23	0.9824	0.9792	0.9931	0.9724	14	11	12.6	15	0	1631	0	0	2905	7
578	712	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	13	14.7	16	0	1662	0	0	2729	7
579	713	3	13.25	13.12	0.13	1	0.13	0.9899	0.9899	1.0000	0.9899	16	14	15.1	16	0	1628	0	0	3119	7
580	714	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9990	0.9990	15	14	14.4	17	0	1828	0	0	3040	7
581	715	5	13.25	13.05	0.20	1	0.20	0.9849	0.9849	0.9976	0.9825	14	12	13.1	16	0	1465	0	0	1963	7
582	716	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	18	18	18.0	18	0	557	0	0	468	7
583	717	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	18	18	18.0	18	0	635	0	0	293	7
584	718	1	13.25	12.93	0.32	2	0.16	0.9761	0.9761	0.9930	0.9093	18	17	17.8	18	0	1655	0	0	2845	7
585	719	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9990	0.9990	16	15	15.8	16	0	1715	0	0	3115	7
586	720	3	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9964	0.9964	18	16	16.7	18	0	1908	0	0	3015	7
587	721	4	13.25	13.03	0.22	1	0.22	0.9836	0.9836	0.9976	0.9812	17	15	16.4	18	0	1467	0	0	1731	7
588	722	5	6.75	6.75	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	14	14.0	14	0	855	0	0	1353	7
589	723	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	14	14.0	14	0	553	0	0	523	7
590	724	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	14	14.0	14	0	477	0	0	438	7
591	725	1	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9967	0.9967	14	13	13.4	14	0	1484	0	0	1999	7
592	726	2	13.25	13.10	0.15	1	0.15	0.9887	0.9887	0.9990	0.9877	14	12	13.3	15	0	1658	0	0	2716	7
593	727	3	13.25	13.25	0.00	0	0.00	1.0000	0.9984	0.9979	0.9963	14	11	13.7	14	0	1652	0	0	2334	7
594	728	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	16	16.0	16	0	1562	0	0	1692	7
595	729	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	17	17	17.0	17	0	1492	0	0	1630	7
596	730	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	18	18	18.0	18	0	628	0	0	473	7
597	731	7	5.50	5.22	0.28	1	0.28	0.9485	0.9485	0.9875	0.9366	17	16	16.9	17	0	347	0	0	329	7
598	801	1	13.25	13.03	0.22	1	0.22	0.9836	0.9836	0.9988	0.9824	17	16	17.0	17	0	1426	0	0	1542	7
599	802	2	13.25	12.80	0.45	2	0.22	0.9660	0.9660	0.9928	0.9590	19	16	16.7	22	0	1794	0	0	1545	7
600	803	3	13.25	13.20	0.05	1	0.05	0.9962	0.9962	0.9941	0.9903	19	18	18.3	20	0	1671	0	0	1547	7
601	804	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9955	0.9955	20	15	16.8	20	0	1656	0	0	1636	7
602	805	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	15	15.3	16	0	1403	0	0	1361	7
603	806	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	17	17	17.0	17	0	542	0	0	370	7
604	807	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	16	16.0	16	0	358	0	0	267	7
605	808	1	13.25	12.72	0.53	3	0.18	0.9597	0.9597	0.9854	0.9456	17	16	16.7	18	0	1381	0	0	1522	7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
606	809	2	13.25	13.15	0.10	1	0.10	0.9925	0.9925	0.9942	0.9867	18	15	16.7	19	0	1484	0	0	1532	7
607	810	3	13.25	13.13	0.12	1	0.12	0.9912	0.9912	0.9946	0.9859	19	17	17.7	19	0	1364	0	0	1357	7
608	811	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9988	0.9988	20	19	19.3	20	0	1478	0	0	1468	7
609	812	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9986	0.9886	21	15	18.6	21	0	1294	0	0	1201	7
610	813	6	5.50	5.38	0.12	1	0.12	0.9788	0.9788	0.9948	0.9737	18	17	17.9	18	0	500	0	0	377	7
611	814	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9968	0.9968	17	12	16.0	17	0	556	0	0	250	7
612	820	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	20	17	18.7	20	0	966	0	0	596	7
613	821	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9950	0.9950	22	19	20.9	22	0	750	0	0	1588	7
614	822	1	13.25	12.73	0.52	1	0.52	0.9610	0.9610	0.9944	0.9556	22	19	20.5	22	0	1802	0	0	6655	7
615	823	2	13.25	12.78	0.47	3	0.16	0.9648	0.9623	0.9890	0.9517	23	20	21.3	25	0	2143	0	0	11019	7
616	824	3	13.25	12.78	0.47	1	0.47	0.9648	0.9648	0.9941	0.9591	23	21	22.4	23	0	3141	0	0	18149	7
617	825	4	13.25	12.95	0.30	2	0.15	0.9774	0.9773	0.9954	0.9728	25	22	23.4	25	0	3263	0	0	18228	7
618	826	5	13.25	13.12	0.13	1	0.13	0.9899	0.9899	0.9957	0.9857	22	19	21.3	22	0	3176	0	0	16780	7
619	827	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9950	0.9950	19	16	18.5	19	0	839	0	0	2527	7
620	828	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9973	0.9973	17	17	17.0	17	0	656	0	0	1588	7
621	829	1	13.25	12.75	0.50	3	0.17	0.9623	0.9606	0.9842	0.9257	18	14	15.8	21	0	2801	0	0	17481	7
622	830	2	13.25	13.20	0.05	2	0.02	0.9962	0.9962	0.9958	0.9920	25	20	22.1	25	0	3169	0	0	16727	7
623	831	3	13.25	13.02	0.23	1	0.23	0.9824	0.9806	0.9934	0.9741	25	18	20.5	25	0	3052	0	0	16559	7
624	901	4	13.25	13.08	0.17	1	0.17	0.9874	0.9874	0.9956	0.9830	22	19	20.7	23	0	3076	0	0	16442	7
625	902	5	13.25	13.25	0.00	0	0.00	1.0000	0.9974	0.9976	0.9950	23	19	20.8	23	0	2772	0	0	13895	7
626	903	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	20	20	20.0	20	0	731	0	0	1204	7
627	904	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	18	17	17.6	19	0	636	0	0	1000	7
628	905	2	13.25	12.42	0.83	4	0.21	0.9371	0.9218	0.9846	0.9076	21	16	17.4	22	0	2735	0	0	14734	7
629	907	3	13.25	12.87	0.58	3	0.19	0.9560	0.9409	0.9848	0.9266	20	15	17.1	22	0	2863	0	0	15550	7
630	908	4	13.25	12.98	0.27	2	0.13	0.9799	0.9751	0.9902	0.9655	21	18	19.2	23	0	2914	0	0	14380	7
631	909	5	13.25	12.68	0.57	4	0.14	0.9572	0.9520	0.9869	0.9395	21	19	20.2	24	0	2643	0	0	14511	7
632	910	6	7.50	7.50	0.00	0	0.00	1.0000	1.0000	0.9964	0.9964	24	22	23.2	24	0	1883	0	0	6423	7
633	911	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9943	0.9943	23	22	22.3	23	0	641	0	0	1186	7
634	912	1	13.25	13.00	0.25	2	0.13	0.9811	0.9794	0.9931	0.9726	22	19	20.7	22	0	2648	0	0	15374	7
635	913	2	13.25	13.13	0.12	1	0.12	0.9911	0.9893	0.9942	0.9835	22	19	20.5	23	0	2954	0	0	14566	7
636	914	3	13.25	13.07	0.18	2	0.09	0.9862	0.9853	0.9946	0.9800	23	17	21.0	24	0	2782	0	0	14747	7
637	915	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9994	0.9994	22	19	21.7	22	0	2794	0	0	13736	7
638	916	5	13.25	13.25	0.00	0	0.00	1.0000	0.9991	0.9994	0.9985	22	20	21.7	24	0	2656	0	0	12050	7
639	917	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	23	23	23.0	23	0	753	0	0	1259	7
640	918	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	22	22	22.0	22	0	731	0	0	675	7
641	919	1	13.25	12.32	0.93	5	0.19	0.9296	0.9260	0.9872	0.9142	21	17	19.2	23	0	2592	0	0	15081	7
642	920	2	13.25	12.73	0.52	5	0.10	0.9610	0.9552	0.9840	0.9399	21	17	19.3	23	0	2807	0	0	14081	7
643	921	3	13.25	13.12	0.13	1	0.13	0.9899	0.9829	0.9962	0.9792	22	19	19.6	22	0	2666	0	0	14884	7
644	922	4	13.25	13.25	0.00	0	0.00	1.0000	0.9954	0.9981	0.9935	21	16	18.9	21	0	2685	0	0	13296	7
645	923	5	13.25	12.77	0.48	2	0.24	0.9635	0.9635	0.9957	0.9594	22	21	21.7	23	0	2774	0	0	12012	7
646	924	6	5.50	5.28	0.22	1	0.22	0.9606	0.9606	0.9887	0.9497	18	14	16.5	18	0	797	0	0	1349	7
647	925	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	12	14.1	16	0	852	0	0	931	7
648	926	1	13.25	13.08	0.17	1	0.18	0.9874	0.9731	0.9981	0.9713	18	15	17.1	18	0	2573	0	0	13830	7
649	927	2	13.25	12.93	0.32	2	0.16	0.9761	0.9761	0.9934	0.9697	22	21	21.6	22	0	2841	0	0	12945	7
650	928	3	13.25	12.83	0.42	2	0.21	0.9686	0.9668	0.9957	0.9628	22	17	21.0	23	0	2701	0	0	13962	7
651	929	4	13.25	13.07	0.18	1	0.18	0.9862	0.9737	0.9951	0.9689	19	14	17.5	19	0	2699	0	0	12846	7
652	930	5	13.25	12.70	0.55	2	0.27	0.9585	0.9585	0.9947	0.9534	24	18	20.3	25	0	2554	0	0	11223	7
653	1001	6	5.50	4.22	1.28	2	0.64	0.7667	0.7667	0.9833	0.7539	21	18	19.4	21	0	560	0	0	814	7
654	1002	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	22	22	22.0	22	0	631	0	0	730	7
655	1003	1	13.25	13.25	0.00	0	0.00	1.0000	0.9930	1.0000	0.9930	21	18	19.2	22	0	2759	0	0	15190	7
656	1004	2	13.25	13.25	0.00	0	0.00	1.0000	0.9922	0.9977	0.9899	21	18	19.9	22	0	2832	0	0	13460	7
657	1005	3	13.25	13.25	0.00	0	0.00	1.0000	0.9931	0.9970	0.9900	21	19	19.5	22	0	2860	0	0	13745	7
658	1006	4	13.25	12.97	0.28	3	0.09	0.9786	0.9688	0.9908	0.9599	20	17	18.1	21	0	2705	0	0	12323	7
659	1007	5	13.25	13.25	0.00	0	0.00	1.0000	0.9966	0.9982	0.9948	23	18	19.9	23	0	2893	0	0	12093	7
660	1008	6	7.75	7.75	0.00	0	0.00	1.0000	1.0000	0.9980	0.9980	22	20	20.8	22	0	1726	0	0	4917	7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
661	1009	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	21	20	20.7	21	0	616	0	0	1101	7
662	1010	1	13.25	13.00	0.25	2	0.13	0.9811	0.9768	1.0000	0.9768	21	19	19.9	22	0	2532	0	0	13215	7
663	1011	2	13.25	12.90	0.35	4	0.09	0.9736	0.9419	0.9933	0.9654	21	17	20.3	22	0	2790	0	0	13291	7
664	1012	3	13.25	11.97	1.28	4	0.32	0.9031	0.8916	0.9849	0.8781	22	18	19.6	24	0	2535	0	0	12410	7
665	1013	4	13.25	12.87	0.38	3	0.13	0.9711	0.9520	0.9912	0.9436	20	16	16.7	20	0	2638	0	0	12460	7
666	1014	5	13.25	13.05	0.20	2	0.10	0.9849	0.9717	0.9960	0.9678	19	17	18.2	20	0	2932	0	0	13342	7
667	1015	6	7.75	7.70	0.05	1	0.05	0.9935	0.9935	0.9953	0.9888	26	22	24.6	27	0	1899	0	0	6682	7
668	1016	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	24	23	23.2	24	0	641	0	0	851	7
669	1017	1	13.25	12.97	0.28	2	0.14	0.9786	0.9769	0.9944	0.9714	22	18	20.9	23	0	2654	0	0	13356	7
670	1018	2	13.25	13.10	0.15	2	0.07	0.9887	0.9887	0.9965	0.9852	23	21	22.2	23	0	2936	0	0	13032	7
671	1019	3	13.25	12.57	0.68	4	0.16	0.9484	0.9484	0.9645	0.9147	24	18	21.8	25	0	2613	0	0	12722	7
672	1020	4	13.25	13.12	0.13	2	0.07	0.9899	0.9882	0.9964	0.9846	22	20	20.7	24	0	2851	0	0	12303	7
673	1021	5	13.25	12.08	1.17	5	0.23	0.9119	0.9093	0.9890	0.8993	24	17	20.5	24	0	2480	0	0	10284	7
674	1022	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9987	0.9987	20	19	19.6	20	0	733	0	0	1203	7
675	1023	7	5.50	5.33	0.17	1	0.17	0.9697	0.9697	0.9913	0.9612	19	18	18.8	20	0	600	0	0	894	7
676	1024	1	13.25	13.02	0.23	3	0.07	0.9824	0.9763	0.9890	0.9656	22	14	19.7	23	0	2549	0	0	13295	7
677	1025	2	13.25	12.53	0.72	4	0.18	0.9459	0.9416	0.9889	0.9311	21	19	20.3	23	0	2829	0	0	12563	7
678	1026	3	13.25	13.10	0.15	1	0.15	0.9887	0.9887	0.9994	0.9881	23	21	22.1	23	0	2874	0	0	13061	7
679	1027	4	13.25	13.05	0.20	2	0.10	0.9849	0.9815	0.9910	0.9727	21	19	20.1	23	0	2802	0	0	11848	7
680	1028	5	13.25	13.07	0.18	2	0.09	0.9862	0.9709	0.9968	0.9678	21	11	16.6	22	0	2704	0	0	10914	7
681	1029	6	7.75	7.55	0.20	1	0.20	0.9742	0.9742	0.9949	0.9692	22	19	20.4	22	0	1685	0	0	5858	7
682	1030	7	5.50	5.30	0.20	1	0.20	0.9636	0.9636	0.9946	0.9584	22	21	21.8	22	0	596	0	0	948	7
683	1031	1	13.25	13.07	0.18	2	0.09	0.9862	0.9862	0.9896	0.9759	22	19	21.1	22	0	2668	0	0	13557	7
684	1101	2	13.25	12.90	0.35	3	0.12	0.9736	0.9666	0.9971	0.9638	21	18	19.2	22	0	2924	0	0	12888	7
685	1102	3	13.25	13.12	0.13	1	0.13	0.9900	0.9882	0.9976	0.9858	23	18	21.0	25	0	2843	0	0	13040	7
686	1103	4	13.25	12.85	0.40	2	0.20	0.9700	0.9700	0.9892	0.9595	23	20	21.6	23	0	2830	0	0	11578	7
687	1104	5	13.25	12.78	0.47	1	0.47	0.9648	0.9648	0.9994	0.9642	24	22	22.6	25	0	2834	0	0	11151	7
688	1105	6	7.50	7.13	0.37	2	0.18	0.9511	0.9511	0.9945	0.9459	23	19	21.0	23	0	1544	0	0	6510	7
689	1106	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	22	21	21.1	22	0	638	0	0	1188	7
690	1107	1	13.25	12.82	0.43	3	0.14	0.9673	0.9585	0.9904	0.9493	23	18	19.9	24	0	2755	0	0	13037	7
691	1108	2	13.25	13.00	0.25	2	0.13	0.9811	0.9811	0.9958	0.9770	23	20	22.0	23	0	2783	0	0	12123	7
692	1109	3	13.25	13.02	0.23	2	0.12	0.9824	0.9824	0.9963	0.9788	24	19	21.5	24	0	2754	0	0	12543	7
693	1110	4	13.25	13.12	0.13	1	0.13	0.9897	0.9882	0.9951	0.9834	23	21	21.8	23	0	2826	0	0	11073	7
694	1111	5	13.25	13.02	0.23	1	0.23	0.9824	0.9790	0.9981	0.9771	21	19	20.4	21	0	2762	0	0	11159	7
695	1112	6	7.50	7.50	0.00	0	0.00	1.0000	1.0000	0.9970	0.9970	24	22	23.1	24	0	1748	0	0	6112	7
696	1113	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9983	0.9983	20	18	19.3	21	0	640	0	0	850	7
697	1114	1	13.25	13.25	0.00	0	0.00	1.0000	0.9922	0.9988	0.9910	20	17	18.3	21	0	2633	0	0	12595	7
698	1115	2	13.25	13.25	0.00	0	0.00	1.0000	0.9983	0.9994	0.9977	21	18	20.3	21	0	2774	0	0	12313	7
699	1116	3	13.25	12.72	0.53	1	0.53	0.9597	0.9519	0.9981	0.9500	20	18	19.0	20	0	2731	0	0	12145	7
700	1117	4	13.25	12.70	0.55	2	0.27	0.9585	0.9251	0.9918	0.9175	18	12	14.4	18	0	2524	0	0	10550	7
701	1118	5	13.25	13.25	0.00	0	0.00	1.0000	0.9901	0.9958	0.9859	20	16	18.1	20	0	2917	0	0	10557	7
702	1119	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	17	17	17.0	17	0	763	0	0	1318	7
703	1120	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	21	18	18.3	21	0	724	0	0	611	7
704	1121	1	13.25	13.25	0.00	0	0.00	1.0000	0.9983	1.0000	0.9983	21	19	20.3	21	0	2646	0	0	9531	7
705	1122	2	13.25	13.25	0.00	0	0.00	1.0000	0.9883	1.0000	0.9883	19	17	18.3	20	0	1914	0	0	5282	7
706	1123	3	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	17	16	16.7	17	0	966	0	0	564	7
707	1127	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	15	15.3	17	0	627	0	0	207	7
708	1128	1	13.25	13.10	0.15	2	0.08	0.9887	0.9752	0.9811	0.9568	19	16	17.6	19	0	2350	0	0	12208	7
709	1129	2	13.25	12.47	0.78	1	0.78	0.9409	0.9347	0.9935	0.9286	20	17	18.3	22	0	2588	0	0	10775	7
710	1130	3	13.25	13.25	0.00	0	0.00	1.0000	0.9947	0.9987	0.9934	22	17	19.7	22	0	2759	0	0	11764	7
711	1201	4	13.25	12.80	0.45	2	0.22	0.9660	0.9660	0.9942	0.9604	23	20	21.1	23	0	2630	0	0	10872	7
712	1202	5	13.25	12.90	0.35	2	0.18	0.9736	0.9736	0.9962	0.9699	23	21	21.6	24	0	2718	0	0	10913	7
713	1203	6	5.50	5.45	0.05	1	0.05	0.9909	0.9909	1.0000	0.9909	24	24	24.0	24	0	708	0	0	1184	7
714	1204	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	24	22	23.0	24	0	566	0	0	612	7
715	1205	1	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9976	0.9976	24	21	22.8	25	0	2738	0	0	11926	7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
716	1206	2	13.25	13.12	0.13	1	0.13	0.9899	0.9639	0.9928	0.9570	19	11	15.4	19	0	2873	0	0	11389	7
717	1207	3	13.25	12.48	0.77	7	0.11	0.9421	0.9059	0.9819	0.8895	18	11	14.3	20	0	2538	0	0	12106	7
718	1208	4	13.25	13.02	0.23	2	0.12	0.9824	0.9682	0.9950	0.9634	19	15	17.3	20	0	2811	0	0	10689	7
719	1209	5	13.25	12.97	0.28	2	0.14	0.9786	0.9697	0.9961	0.9659	21	17	18.5	21	0	2750	0	0	10281	7
720	1210	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	20	19	20.0	21	0	750	0	0	874	7
721	1211	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	17	17	17.0	17	0	615	0	0	374	7
722	1212	1	14.25	13.55	0.70	2	0.35	0.9509	0.9509	0.9939	0.9451	20	15	18.8	21	0	2209	0	0	6887	7
723	1213	2	14.25	13.87	0.38	2	0.19	0.9731	0.9731	0.9952	0.9684	20	17	19.1	20	0	2456	0	0	7730	7
724	1214	3	14.25	14.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	21	20	20.8	21	0	2245	0	0	7072	7
725	1215	4	14.25	14.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	21	19	20.0	21	0	1965	0	0	6293	7
726	1216	5	14.25	14.05	0.20	1	0.20	0.9860	0.9860	0.9945	0.9806	19	17	17.6	19	0	2417	0	0	5167	7
727	1217	6	7.50	7.50	0.00	0	0.00	1.0000	1.0000	0.9888	0.9888	22	21	21.6	22	0	913	0	0	1448	7
728	103	2	13.25	13.07	0.18	2	0.09	0.9862	0.9862	0.9957	0.9820	17	14	16.0	18	0	1429	0	0	2560	8
729	104	3	13.25	13.05	0.20	1	0.20	0.9849	0.9849	0.9970	0.9819	15	12	13.0	18	0	1722	0	0	4123	8
730	105	4	13.25	12.45	0.80	2	0.40	0.9396	0.9291	0.9917	0.9213	20	17	18.2	22	0	2710	0	0	12809	8
731	106	5	13.25	13.25	0.00	0	0.00	1.0000	0.9974	0.9994	0.9968	21	20	20.6	22	0	2698	0	0	13176	8
732	107	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	19	18	18.9	19	0	735	0	0	1582	8
733	108	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	18	18	18.0	18	0	685	0	0	872	8
734	109	1	13.25	11.72	1.53	2	0.77	0.8843	0.8276	0.9908	0.8200	15	10	13.1	19	0	1934	0	0	13913	8
735	110	2	13.25	12.62	0.63	2	0.32	0.9522	0.9316	0.9923	0.9244	18	15	16.3	21	0	2289	0	0	15003	8
736	111	3	13.25	12.08	1.17	5	0.23	0.9119	0.9021	0.9763	0.8807	20	17	17.7	24	0	2267	0	0	15745	8
737	112	4	13.25	13.07	0.18	2	0.09	0.9862	0.9755	0.9945	0.9701	19	16	17.8	21	0	2478	0	0	15361	8
738	113	5	13.25	12.80	0.45	3	0.15	0.9660	0.9523	0.9905	0.9433	19	17	17.6	20	0	2914	0	0	14614	8
739	114	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	17	16	17.0	17	0	792	0	0	1196	8
740	115	7	5.50	5.38	0.12	1	0.12	0.9788	0.9788	0.9676	0.9471	15	13	14.4	15	0	592	0	0	481	8
741	116	1	13.75	13.65	0.10	1	0.10	0.9927	0.9769	0.9970	0.9739	18	15	17.3	20	0	2765	0	0	13984	8
742	117	2	13.25	12.22	1.03	2	0.52	0.9220	0.9053	0.9970	0.9025	19	14	16.4	21	0	2507	0	0	11042	8
743	118	3	13.25	12.58	0.67	5	0.13	0.9497	0.9391	0.9898	0.9295	19	16	18.4	21	0	2415	0	0	12716	8
744	119	4	13.25	11.62	1.63	4	0.41	0.8760	0.8680	0.9848	0.8548	21	16	18.3	21	0	2371	0	0	11364	8
745	120	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9983	0.9883	15	13	14.3	15	0	1927	0	0	3192	8
746	121	6	5.50	5.40	0.10	1	0.10	0.9818	0.9061	0.9891	0.8962	13	10	11.2	13	0	700	0	0	1020	8
747	122	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9886	0.9886	15	13	14.6	16	0	628	0	0	511	8
748	123	1	13.25	12.38	0.87	4	0.22	0.9346	0.8911	0.9833	0.8762	16	11	14.5	19	0	2069	0	0	13515	8
749	124	2	13.25	12.65	0.60	3	0.20	0.9547	0.9244	0.9928	0.9177	16	13	14.9	18	0	2583	0	0	12463	8
750	125	3	13.25	12.97	0.28	3	0.09	0.9786	0.9619	0.9940	0.9561	18	15	16.8	20	0	2650	0	0	13206	8
751	126	4	13.25	12.68	0.57	4	0.14	0.9572	0.9458	0.9826	0.9293	21	13	17.2	22	0	2723	0	0	11176	8
752	127	5	13.25	12.88	0.37	2	0.18	0.9723	0.9380	0.9941	0.9325	18	14	15.0	18	0	2561	0	0	10720	8
753	128	6	5.50	5.37	0.13	1	0.13	0.9758	0.9758	0.9890	0.9651	17	15	16.6	17	0	833	0	0	983	8
754	129	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	17	15	16.7	17	0	634	0	0	651	8
755	130	1	13.25	12.42	0.83	8	0.10	0.9371	0.9036	0.9809	0.8863	18	14	15.3	21	0	2432	0	0	13103	8
756	131	2	13.25	12.58	0.67	2	0.33	0.9497	0.9103	0.9856	0.8972	16	13	14.7	19	0	2621	0	0	12057	8
757	201	3	13.25	12.85	0.40	3	0.13	0.9698	0.9385	0.9939	0.9328	17	13	14.9	21	0	2245	0	0	12812	8
758	202	4	13.25	12.92	0.33	4	0.08	0.9748	0.9612	0.9931	0.9546	18	16	16.9	18	0	2700	0	0	11874	8
759	203	5	13.25	10.90	2.35	4	0.59	0.8226	0.8124	0.9848	0.8001	18	16	17.2	18	0	2194	0	0	9202	8
760	204	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9972	0.9972	17	16	16.0	17	0	713	0	0	1041	8
761	205	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	16	16.0	16	0	624	0	0	528	8
762	206	1	13.25	13.12	0.13	1	0.13	0.9899	0.9803	0.9970	0.9774	20	17	18.7	21	0	2694	0	0	13160	8
763	207	2	13.25	12.55	0.70	6	0.12	0.9472	0.9393	0.9895	0.9294	19	10	17.3	20	0	2550	0	0	12240	8
764	208	3	13.25	13.25	0.00	0	0.00	1.0000	0.9808	0.9994	0.9802	17	15	16.4	17	0	2617	0	0	12906	8
765	209	4	13.25	11.87	1.38	5	0.28	0.8956	0.8724	0.9892	0.8630	18	15	16.5	19	0	2491	0	0	10551	8
766	210	5	13.25	11.82	1.43	6	0.24	0.8918	0.8509	0.9826	0.8361	18	13	14.9	22	0	1933	0	0	8974	8
767	211	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	14	14.6	15	0	717	0	0	1099	8
768	213	1	10.25	5.47	4.78	3	1.59	0.5333	0.4896	0.9848	0.4822	15	13	14.6	16	0	1089	0	0	5982	8
769	214	2	10.25	10.07	0.18	1	0.18	0.9821	0.9157	0.9961	0.9121	15	13	14.0	17	0	2122	0	0	10859	8
770	215	3	10.25	9.90	0.35	2	0.18	0.9236	0.9297	0.9946	0.9248	18	14	15.7	19	0	2219	0	0	10914	8

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
771	216	4	10.25	9.47	0.78	3	0.26	0.9236	0.8898	0.9917	0.8824	17	14	15.9	17	0	1952	0	0	11455	8
772	217	5	10.25	10.05	0.20	1	0.20	0.9805	0.9737	0.9964	0.9702	20	18	19.5	20	0	2203	0	0	9276	8
773	221	2	10.25	10.03	0.22	2	0.11	0.9789	0.9733	0.9942	0.9677	23	18	20.1	23	0	2318	0	0	10336	8
774	222	3	10.25	10.25	0.00	0	0.00	1.0000	0.9742	0.9977	0.9719	20	16	17.1	20	0	2209	0	0	10769	8
775	223	4	10.25	10.25	0.00	0	0.00	1.0000	0.9836	0.9992	0.9828	20	14	18.2	21	0	2178	0	0	9876	8
776	224	5	10.25	10.25	0.00	0	0.00	1.0000	0.9790	0.9993	0.9783	18	15	16.9	18	0	2310	0	0	7490	8
777	306	1	10.25	10.13	0.12	2	0.06	0.9886	0.9747	0.9992	0.9739	20	17	18.3	21	0	2687	0	0	10824	8
778	307	2	10.25	10.08	0.17	1	0.17	0.9837	0.9735	0.9935	0.9672	19	17	18.5	21	0	2341	0	0	10233	8
779	308	3	10.25	9.63	0.62	3	0.21	0.9398	0.9245	0.9872	0.9127	19	15	17.5	20	0	2079	0	0	10582	8
780	309	4	10.25	10.25	0.00	0	0.00	1.0000	0.9817	0.9979	0.9796	19	17	18.1	20	0	2408	0	0	9791	8
781	310	5	10.25	10.17	0.08	1	0.08	0.9919	0.9699	0.9915	0.9617	19	16	17.2	21	0	2171	0	0	9750	8
782	313	1	10.25	9.63	0.62	3	0.21	0.9398	0.9189	0.9889	0.9087	19	16	17.4	20	0	2440	0	0	11085	8
783	314	2	10.25	9.78	0.47	2	0.23	0.9545	0.9358	0.9924	0.9287	19	16	17.6	19	0	2204	0	0	9634	8
784	315	3	10.25	10.25	0.00	0	0.00	1.0000	0.9839	0.9993	0.9832	20	18	18.7	20	0	2302	0	0	12643	8
785	316	4	10.25	9.90	0.35	4	0.09	0.9660	0.9580	0.9900	0.9480	21	18	19.5	21	0	2545	0	0	9960	8
786	317	5	10.25	10.25	0.00	0	0.00	1.0000	0.9955	0.9954	0.9909	22	19	20.4	22	0	2317	0	0	9235	8
787	320	1	10.25	10.25	0.00	0	0.00	1.0000	1.0000	0.9985	0.9985	23	20	22.1	23	0	2366	0	0	9994	8
788	321	2	10.25	9.63	0.62	2	0.31	0.9398	0.9318	0.9948	0.9270	21	17	19.4	21	0	2332	0	0	9342	8
789	322	3	10.25	10.25	0.00	0	0.00	1.0000	0.9964	0.9985	0.9949	23	17	20.3	24	0	2423	0	0	9996	8
790	323	4	10.25	9.93	0.32	3	0.11	0.9691	0.9530	0.9897	0.9432	22	18	18.8	22	0	2378	0	0	8257	8
791	324	5	10.25	10.17	0.08	1	0.08	0.9918	0.9825	0.9992	0.9817	20	17	19.0	21	0	2114	0	0	5693	8
792	328	2	10.25	9.87	0.38	2	0.19	0.9626	0.9581	0.9985	0.9567	22	19	20.4	22	0	2768	0	0	9207	8
793	329	3	10.25	10.20	0.05	1	0.05	0.9951	0.9856	0.9947	0.9804	21	16	19.4	22	0	2421	0	0	9913	8
794	330	4	10.25	6.30	3.95	1	3.95	0.6146	0.6102	0.9873	0.6025	22	18	19.9	22	0	1762	0	0	6426	8
795	331	5	10.25	10.07	0.18	2	0.09	0.9821	0.9776	0.9947	0.9724	21	19	20.4	21	0	2417	0	0	8400	8
796	403	1	10.25	9.85	0.40	2	0.20	0.9610	0.9489	0.9912	0.9406	20	16	18.4	20	0	2480	0	0	9126	8
797	404	2	10.25	9.55	0.70	6	0.12	0.9317	0.9150	0.9817	0.8983	21	18	18.7	23	0	2277	0	0	8193	8
798	405	3	10.25	9.88	0.37	1	0.37	0.9642	0.9631	0.9963	0.9595	24	17	22.0	24	0	2344	0	0	8445	8
799	406	4	10.25	10.17	0.08	2	0.04	0.9919	0.9919	0.9952	0.9871	25	21	23.5	26	0	2536	0	0	8389	8
800	407	5	10.25	10.10	0.15	1	0.15	0.9854	0.9782	0.9962	0.9745	24	17	21.3	25	0	2337	0	0	8202	8
801	410	1	13.25	13.03	0.22	1	0.22	0.9836	0.9673	0.9950	0.9625	21	14	17.1	22	0	3041	0	0	9533	8
802	411	2	13.25	13.08	0.17	1	0.17	0.9874	0.9771	0.9957	0.9728	19	17	18.2	20	0	2723	0	0	8813	8
803	412	3	13.25	12.80	0.45	5	0.09	0.9660	0.9580	0.9950	0.9530	21	17	18.8	22	0	2491	0	0	9174	8
804	413	4	13.25	12.72	0.53	1	0.53	0.9597	0.9492	0.9931	0.9427	21	16	18.6	21	0	2692	0	0	8177	8
805	414	5	13.25	13.10	0.15	2	0.08	0.9890	0.9860	0.9950	0.9810	23	20	21.7	24	0	2640	0	0	7913	8
806	415	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	22	22	22.0	22	0	684	0	0	902	8
807	416	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	23	23	23.0	23	0	637	0	0	660	8
808	417	1	13.25	13.18	0.07	1	0.07	0.9950	0.9950	0.9969	0.9919	23	22	22.2	23	0	2718	0	0	9134	8
809	418	2	13.25	13.25	0.00	0	0.00	1.0000	0.9983	1.0000	0.9983	22	21	21.5	22	0	2761	0	0	7865	8
810	419	3	13.25	11.75	1.50	2	0.75	0.8868	0.8868	0.9950	0.8824	23	18	21.5	23	0	2440	0	0	9874	8
811	420	4	13.25	13.00	0.25	2	0.13	0.9811	0.9641	0.9950	0.9593	20	16	17.4	20	0	2813	0	0	9025	8
812	421	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	22	20	21.2	22	0	2436	0	0	7134	8
813	422	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9970	0.9970	21	20	20.3	21	0	686	0	0	1049	8
814	423	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	20	18	19.0	20	0	612	0	0	735	8
815	424	1	13.25	13.25	0.00	0	0.00	1.0000	0.9974	0.9994	0.9968	23	16	19.0	23	0	2634	0	0	9190	8
816	425	2	13.25	12.72	0.53	2	0.26	0.9597	0.9458	0.9947	0.9408	19	16	16.5	20	0	2426	0	0	7868	8
817	426	3	13.25	13.25	0.00	0	0.00	1.0000	0.9901	1.0000	0.9901	19	15	16.4	19	0	2552	0	0	8950	8
818	427	4	13.25	13.12	0.13	1	0.13	0.9899	0.9821	0.9993	0.9814	20	14	17.1	21	0	2533	0	0	8098	8
819	428	5	13.25	13.25	0.00	0	0.00	1.0000	0.9649	0.9993	0.9642	19	13	14.6	20	0	2426	0	0	8145	8
820	429	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	22	22	22.0	22	0	719	0	0	1121	8
821	430	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9944	0.9944	15	14	14.7	15	0	619	0	0	451	8
822	501	1	14.25	12.23	2.02	5	0.40	0.8585	0.8504	0.9882	0.8404	19	12	14.6	21	0	2215	0	0	4281	8
823	502	2	14.25	14.12	0.13	1	0.13	0.9906	0.9800	0.9928	0.9729	19	13	16.6	20	0	2143	0	0	4797	8
824	503	3	14.25	14.25	0.00	0	0.00	1.0000	0.9927	1.0000	0.9927	19	18	18.7	19	0	2081	0	0	5101	8

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
825	504	4	14.25	14.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	22	22	22.0	22	0	2250	0	0	4053	8
826	505	5	14.25	14.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	24	21	21.8	24	0	1923	0	0	3907	8
827	506	6	7.50	7.32	0.18	1	0.18	0.9756	0.9756	0.9980	0.9736	22	18	19.7	22	0	892	0	0	1203	8
828	522	1	13.25	12.83	0.42	3	0.14	0.9686	0.9686	0.9875	0.9565	15	13	13.5	15	0	1646	0	0	1739	8
829	523	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9987	0.9987	15	13	13.3	15	0	1371	0	0	1609	8
830	524	3	13.25	13.17	0.08	1	0.08	0.9937	0.9937	0.9987	0.9924	15	13	13.8	15	0	1375	0	0	1826	8
831	525	4	13.25	13.25	0.00	0	0.00	1.0000	0.9937	0.9987	0.9924	13	11	12.7	13	0	1277	0	0	1927	8
832	526	5	13.25	12.98	0.27	2	0.13	0.9799	0.9799	0.9932	0.9732	13	12	12.7	14	0	1301	0	0	1641	8
833	527	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	13	13	13.0	13	0	633	0	0	491	8
834	528	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	12	13.7	14	0	509	0	0	543	8
835	530	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	14	14.4	16	0	1211	0	0	1772	8
836	531	3	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	15	15.2	16	0	1340	0	0	1725	8
837	601	4	13.25	12.95	0.30	1	0.30	0.9774	0.9745	0.9927	0.9674	14	11	12.3	14	0	1435	0	0	1773	8
838	602	5	13.25	13.25	0.00	0	0.00	1.0000	0.9576	0.9989	0.9565	12	11	11.5	12	0	1465	0	0	2345	8
839	603	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	15	15.0	15	0	668	0	0	405	8
840	604	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	15	15.7	16	0	600	0	0	328	8
841	605	1	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9988	0.9988	16	14	14.2	16	0	1355	0	0	1514	8
842	606	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	11	13.1	15	0	1253	0	0	1452	8
843	607	3	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	14	14.0	15	0	1311	0	0	1315	8
844	608	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	14	14.9	15	0	1249	0	0	1692	8
845	609	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9987	0.9987	15	14	14.3	15	0	1333	0	0	1445	8
846	611	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	15	15.0	15	0	650	0	0	234	8
847	611	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	15	15.0	15	0	583	0	0	256	8
848	612	1	13.25	13.15	0.10	1	0.10	0.9925	0.9925	0.9973	0.9898	15	14	14.9	15	0	1212	0	0	1318	8
849	613	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9974	0.9974	15	14	14.5	15	0	1263	0	0	1761	8
850	614	3	10.00	10.00	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	13	13	13.0	13	0	1053	0	0	1428	8
851	615	4	13.25	13.08	0.17	2	0.08	0.9872	0.9874	0.9918	0.9793	13	11	12.5	14	0	1287	0	0	1786	8
852	616	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	13	12	12.5	14	0	1417	0	0	1395	8
853	617	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	14	13	13.5	14	0	699	0	0	323	8
854	618	7	5.50	5.50	0.00	0	0.00	1.0000	1.0000	0.9941	0.9941	13	13	13.0	13	0	572	0	0	225	8
855	619	1	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	13	12	12.6	14	0	1380	0	0	1547	8
856	620	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9965	0.9965	14	13	13.3	15	0	1545	0	0	1440	8
857	621	3	13.25	12.38	0.87	4	0.22	0.9346	0.8876	0.9865	0.8756	13	10	11.4	13	0	1270	0	0	1743	8
858	622	4	13.25	13.25	0.00	0	0.00	1.0000	0.9984	1.0000	0.9984	13	11	12.2	13	0	1481	0	0	1526	8
859	623	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	17	14	15.2	17	0	1466	0	0	1334	8
860	624	6	5.50	5.50	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	16	16.0	16	0	691	0	0	380	8
861	625	7	5.50	5.35	0.15	1	0.15	0.9727	0.9727	0.9968	0.9696	16	15	15.2	16	0	544	0	0	154	8
862	626	1	13.25	12.45	0.80	3	0.27	0.9396	0.9396	0.9943	0.9342	16	14	15.0	16	0	1167	0	0	1359	8
863	627	2	13.25	13.25	0.00	0	0.00	1.0000	1.0000	0.9960	0.9960	16	14	15.6	16	0	1277	0	0	1407	8
864	628	3	13.25	13.07	0.18	1	0.18	0.9862	0.9862	0.9976	0.9838	16	16	16.0	16	0	1406	0	0	1866	8
865	629	4	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	16	13	14.3	16	0	1668	0	0	1596	8
866	630	5	13.25	13.25	0.00	0	0.00	1.0000	1.0000	1.0000	1.0000	15	14	14.7	15	0	1465	0	0	1735	8

* INCLUDES TEST MILEAGES RUN DURING REVENUE SYSTEM SHUTDOWN.

APPENDIX C: MONTHLY SUMMARY OF OPERATIONS

The data in this printout consist of monthly summaries of the data in the daily compilations of Appendix B. The column headings are self-explanatory. Each monthly entry consists of two rows, as follows:

Row 1: Summarized data for the month.

Row 2. Cumulative data since the inception of the system. Total operating and scheduled hours, total passengers carried, total fleet miles, etc., are shown in this row.

These summaries go back to October 1975, and thus cover most of the life of the system.

MONTH	SCHED OPR. HOURS	ACTUAL OPR. HOURS	PASS. CARRIED	FLEET MILES	DOWNT. EVENTS	TOTAL DOWNT.	MEAN DOWNT.	SYSTEM AVAIL.	SYS/VEH AVAIL.	TRIP REL	CONV. DEPEN.	AVERAGE FLEET MILEAGE	AVERAGE PASS. CARRIED	AVE VEH OPR.	DAY SCH MO.
10/75	284.8	243.3	93644	46874	98	41.6	.42	0.8617	0.8616	0.9893	0.8526	1512.1	3020.8	19.0	31
	*458.4	*378.9	93644	*120114	** 98	**41.6									
11/75	278.0	243.9	93548	40313	70	34.1	.49	0.8605	0.8069	0.9884	0.8057	1550.5	3598.0	18.6	26
	736.4	622.8	187192	160427	168	75.6									
12/75	233.8	180.5	79235	34732	101	53.2	.53	0.7628	0.7402	0.9391	0.7300	1653.9	3773.1	22.4	21
	970.1	803.3	266427	195159	269	128.9									
1/76	309.8	211.7	119399	45226	150	98.1	.65	0.6336	0.6008	0.9120	0.5914	1615.2	4264.3	18.3	28
	1279.9	1015.0	385826	240385	419	227.0									
2/76	186.0	135.7	38200	26782	77	50.3	.65	0.7266	0.7003	0.9284	0.6920	1575.4	2247.1	21.4	17
	1465.9	1150.7	424026	267167	496	277.3									
3/76	267.0	248.5	51998	42838	51	18.5	.36	0.9385	0.8933	0.9933	0.8874	1784.9	2166.6	17.4	24
	1732.9	1399.3	476024	310005	547	295.8									
4/76	317.0	298.8	67512	52877	58	18.2	.31	0.9397	0.9343	0.9919	0.9272	1823.3	2328.0	23.2	29
	2049.9	1698.1	543536	362882	605	314.0									
5/76	313.7	300.7	32165	48925	44	13.0	.29	0.9545	0.9503	0.9931	0.9440	1630.8	1072.2	22.4	30
	2363.6	1998.8	575701	411807	649	326.9									
6/76	330.0	316.8	31715	63010	45	13.2	.29	0.9604	0.9464	0.9933	0.9394	2100.3	1057.2	19.2	30
	2693.6	2315.6	607416	474817	694	340.1									
7/76	317.0	302.6	47966	68306	56	14.4	.26	0.9567	0.9469	0.9913	0.9387	2355.4	1654.0	21.6	29
	3010.6	2618.2	655382	543123	750	354.5									
8/76	254.0	239.4	116774	51843	77	14.6	.19	0.9489	0.9392	0.9801	0.9232	2254.0	5077.1	24.2	23
	3264.6	2857.6	772156	594966	827	369.1									
9/76	323.8	307.0	284333	72355	76	16.8	.22	0.9554	0.9524	0.9826	0.9361	2495.0	9804.6	23.7	29
	3588.4	3164.5	1056489	667321	903	385.9									
10/76	342.3	320.3	267212	67078	66	22.0	.33	0.9287	0.9234	0.9837	0.9093	2163.8	8619.7	22.7	31
	3930.6	3484.8	1323701	734399	969	407.9									
11/76	304.0	289.6	223297	54078	70	14.4	.21	0.9535	0.9312	0.9899	0.9222	2002.9	8270.3	21.0	27
	4234.6	3774.4	1546998	788477	1039	422.3									

**NOTE: These are cumulative from October 1, 1975 on; the number of downtime events prior to this date is not known.

12/76	252.3	239.4	116568	37597	38	12.8	.34	0.9531	0.9136	0.9935	0.9080	1709.0	5298.5	19.3	22
	4486.9	4013.8	1663566	826074	1077	435.1									
1/77	310.4	254.8	152980	46712	64	55.5	.87	0.8418	0.8263	0.9243	0.8188	1557.1	5099.3	16.8	30
	4797.2	4268.6	1816546	872786	1141	490.7									
2/77	295.8	275.3	206545	57162	57	8.6	.15	0.9687	0.9609	0.9944	0.9555	2117.1	7049.8	20.0	27
	5093.0	4543.9	2023091	929948	1198	499.2									
3/77	303.5	290.9	176730	51693	53	12.4	.23	0.9642	0.9536	0.9929	0.9471	1914.6	6545.6	19.4	27
	5396.5	4834.8	2199821	981641	1251	511.7									
4/77	314.5	308.8	187025	57029	24	5.7	.24	0.9832	0.9740	0.9949	0.9691	1966.5	6449.1	19.9	29
	5711.0	5143.7	2386846	1038670	1275	517.3									
5/77	296.3	293.3	46258	32839	19	2.9	.15	0.9910	0.9908	0.9960	0.9869	1216.3	1713.3	18.4	27
	6007.2	5437.0	2433104	1071509	1294	520.2									
6/77	335.5	333.2	32261	32465	16	2.3	.15	0.9935	0.9924	0.9973	0.9897	1082.2	1075.4	15.0	30
	6342.7	5770.2	2465365	1103974	1310	522.6									
7/77	313.5	311.2	47982	35400	14	2.3	.16	0.9932	0.9928	0.9981	0.9890	1180.0	1599.4	15.7	30
	6656.2	6081.4	2513347	1139374	1324	524.8									
8/77	282.5	278.2	143872	42665	24	4.3	.18	0.9872	0.9862	0.9951	0.9810	1641.0	5533.5	20.2	26
	6938.7	6359.6	2657219	1182039	1348	529.1									
9/77	324.3	317.4	308172	64753	41	6.9	.17	0.9813	0.9779	0.9944	0.9725	2232.9	10626.6	21.9	29
	7263.0	6677.0	2965391	1246792	1389	536.0									
10/77	340.0	331.3	292462	67123	53	8.7	.16	0.9726	0.9678	0.9936	0.9627	2165.3	9434.3	22.4	31
	7603.0	7008.3	3257853	1313915	1442	544.7									
11/77	307.5	302.5	233672	58797	24	5.0	.21	0.9852	0.9807	0.9965	0.9773	2177.7	8654.5	21.3	27
	7910.5	7310.8	3491525	1372712	1466	549.7									
12/77	193.5	190.0	115817	33902	22	3.5	.16	0.9843	0.9793	0.9957	0.9751	1994.2	6812.8	21.3	17
	8104.0	7500.8	3607342	1406614	1488	553.2									
1/78	322.8	309.6	253138	55664	60	13.1	.22	0.9646	0.9487	0.9911	0.9401	1919.4	8728.9	19.0	29
	8426.7	7810.4	3860480	1462278	1548	566.4									
2/78	214.8	201.5	181352	40078	41	13.2	.32	0.9407	0.9222	0.9940	0.9172	2003.9	9067.6	18.8	20
	8641.5	8011.9	4041832	1502356	1589	579.6									

3/78	194.8	186.7	180965	44475	28	8.0	.29	0.9589	0.9480	0.9943	0.9427	2340.8	9524.5	21.2	19
	8836.2	8198.7	4222797	1546831	1617	587.6									
4/78	283.0	277.3	176163	55257	30	5.7	.19	0.9820	0.9754	0.9964	0.9719	2125.3	6775.5	21.7	26
	9119.2	8476.0	4398960	1602088	1647	593.3									
5/78	182.5	179.4	36615	22167	13	3.1	.24	0.9845	0.9823	0.9971	0.9795	1477.8	2441.0	17.3	15
	9301.7	8655.4	4435575	1624255	1660	596.4									
6/78	332.3	329.7	37082	34765	13	2.6	.20	0.9930	0.9899	0.9979	0.9869	1158.8	1236.1	14.8	30
	9634.0	8985.0	4472657	1659020	1673	599.0									

* INCLUDES AMOUNTS ACCUMULATED PRIOR TO OCT. 1975.

APPENDIX D:

TYPICAL WEEKLY DEPENDABILITY REPORT

West Virginia University
MORGANTOWN, WEST VIRGINIA 26506

Personal Rapid Transit System

April 6, 1978

Dr. Samy E. G. Elias
Assistant to the President
Rapid Transit
151 Engineering Sciences Building
West Virginia University
Morgantown, West Virginia 26506

Subject: Weekly Dependability Report
Week Ending April 5, 1978

Dear Dr. Elias:

Attached is the subject report for the period ending April 5, 1978. System Dependability was 87.5% for the week compared to 96.6% for the previous reporting period. System Dependability has averaged 93.6% over the past three reporting periods.

Total system downtime was five hours and thirty-six minutes and was distributed as follows:

A) Vehicles - 12%

Three events caused downtime in this category and were classified as follows

Hydraulics	3 Events

B) SCCS/CCCS - 17%

Six events caused downtime in this category. Two events are attributed to a failed Block Control Card in Maintenance Collision Avoidance System. The others are attributed to failed presence detectors (Software E11 and Hardwar 362).

C) Other - 71%

Three events caused downtime in this category. The most significant one was caused by inadequately documented procedures regarding CAS troubleshooting and resetting. The other events were caused by station overfills.

Fare gate entry counts totalled 40,590 passengers for the reporting period.

Prepared by: Theodore C. Barker
Theodore C. Barker

Approved by: Robert J. Bates
Robert J. Bates

TCB/saf

WEEKLY March 30, 1978 TO April 5, 1978

	THIS REPORT PERIOD	LAST 3 WEEKS
System Availability % (A)	89.1%	94.8%
Sys/VSH AVAIL % (A/V)	88.3%	94.1%
Trip Reliability % (R)	99.0%	99.4%
System Dependability % (D)=(A/V·R)	87.5%	93.6%

	Hr Min	
Scheduled Operating Time	51:15	143:30
Actual Operating Time	45:39	136:06
Downtime	5:36	7:24
Downtime Events	12 ✓	25
Mean Downtime (DT)	0:15	0:18
Mean Time Between Failure (MTBF)	3:48	5:27
Number of Vehicles Available AVG	19.9	19.9
MAX/MIN	24/16	24/16
Number of Vehicles Operated	27	27
Fleet Mileage - This Report Period	9,677	29,258
- Total Program	1,553,997	1,553,997
Entry Gate Count	40,590	122,187

Downtime Distribution	Events	Time	Events	Time
•Vehicles	3	0:40	14	2:20
•SCCS/CCCS	6	0:56	8	1:04
•Computers/Software				
•Structures & Power Distribution				
•Other	3	4:00	3	4:00

Prepared by: T. C. Barker

Supervised by:

Approved by:

12

1. DATE: 9/17/1

MPRI

EQUIPMENT STATUS & MAINTENANCE RECORD

NO: 21364

2. DISCREPANCY DISPOSITION INSTRUCTIONS, MAINT REQMTS, WORK INSTRUCTIONS & MAINT PERFORMED
NOTE: REMOVE SHEETS TO EXPOSE APPROPRIATE STATUS COLOR.

45000 SSM - Hyd level - Door cycle test - check all emergency release handles and cables - sweep and mop cloth Vehicle interior - N/a

All above items checked during 45000 SSM. For N/a see SSM file.

30 minutes this only
C.G. Lesser

3. VEHICLE MILEAGE/EQUIP hrs.: 45030

4. REPAIR TIME: 6, 8 hrs

5. FAILED/REPLACED ITEM PART NO.: see SSM

6. FAILED/REPLACED ITEM SERIAL NO.: —

7. REPLACEMENT ITEM SERIAL NO.: —

8. ITEM NOMENCLATURE: —

9. MAINT PERFORMED BY: —

10. ENGINEER (DATE)

ROUTE RECORD TO MAINT ENGR ON COMPLETION OF MAINT

11. VEH/EQUIP SERIAL NO.	12. NOMENCLATURE	13. LOCATION
12		

Monthly Summaries of Maintenance Actions						
Operator's Console	Failures	Wear	Adjustments	Unconfirmed	Other	TOTAL
July 1977	9	0	1	4	3	17
August	7	0	4	4	30	45
September	14	0	18	3	5	40
October	10	1	19	1	15	46
November	8	0	34	3	6	51
December	6	0	23	4	2	35
January 1978	9	0	30	1	3	43
February	19	0	28	0	5	52
March	14	1	12	3	3	33
April	6	0	9	1	3	19
May	12	0	7	2	7	28
June	8	0	9	1	1	19
Totals	122	2	194	27	83	428
	28.5%	.5%	45.3%	6.3%	19.4%	

Monthly Summaries of Maintenance Actions (Continued)						
Computer	Failures	Wear	Adjustments	Unconfirmed	Other	TOTAL
July 1977	10	0	0	0	0	10
August	1	0	0	0	0	1
September	19	0	1	0	2	22
October	2	3	2	1	1	9
November	1	0	0	2	3	6
December	2	0	1	2	4	9
January 1978						0
February	3	0	0	1	4	8
March	1	1	0	0	0	2
April	2	0	0	10	3	15
May	0	0	0	1	1	2
June	0	0	1	0	0	1
TOTALS	41	4	5	17	18	85
	48.2%	4.7%	5.9%	20%	21.2%	

Monthly Summaries of Maintenance Actions (Continued)						
Central Control	Failures	Wear	Adjustments	Unconfirmed	Other	TOTAL
July 1977	28	0	8	16	16	68
August	17	1	1	2	2	23
September	105	3	18	3	12	141
October	238	6	3	14	7	268
November	283	0	8	16	12	319
December	113	0	8	3	13	137
January 1978	11	0	0	0	5	16
February	3	0	0	2	2	7
March	43	1	12	4	8	68
April	91	0	16	4	6	117
May	26	0	6	4	7	43
June	22	0	5	2	7	36
TOTALS	980	11	85	70	97	1243
	78.8%	.8%	6.8%	5.6%	7.8%	

Monthly Summaries of Maintenance Actions (Continued)

Support Equipment	Failures	Wear	Adjustments	Unconfirmed	Other	TOTAL
July 1977	1	0	2	0	3	6
August	2	1	0	0	6	9
September	3	3	1	0	2	9
October	3	0	0	2	2	7
November	4	4	1	1	4	14
December	9	0	5	0	0	14
January 1978	6	0	0	0	6	12
February	3	0	0	1	3	7
March	11	3	3	0	8	25
April	11	0	2	8	6	27
May	5	0	1	1	13	20
June	13	0	1	2	3	19
TOTALS	71	11	16	15	56	169
	42%	6.5%	9.4%	8.9%	33%	

Monthly Summaries of Maintenance Actions (Continued)						
S & PDS	Failures	Wear	Adjustments	Unconfirmed	Other	TOTAL
July 1977	9	0	1	6	5	21
August	9	2	4	1	9	25
September	9	3	0	2	11	25
October	11	1	0	2	16	30
November	4	0	2	0	19	25
December	15	0	12	3	22	52
January 1978	12	0	1	0	22	35
February	7	0	0	1	22	30
March	10	2	5	0	28	45
April	7	0	4	2	21	34
May	9	0	0	0	24	33
June	8	0	1	0	29	38
TOTALS	110	8	30	17	228	393
	27.9%	2%	7.6%	4.3%	58	

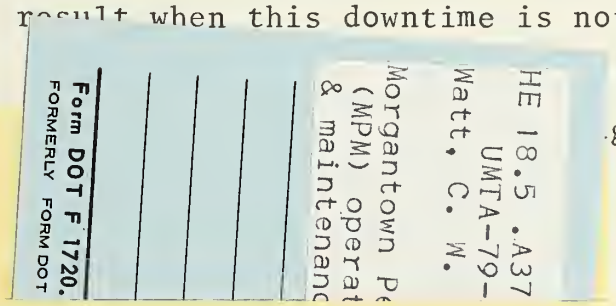
Monthly Summaries of Maintenance Actions (Continued)

Vehicles	Failures	Wear	Adjustments	Unconfirmed	Other	TOTAL
July 1977	49	7	10	15	18	99
August	44	37	8	8	22	119
September	86	43	39	22	82	272
October	93	58	27	19	73	270
November	106	49	29	26	81	291
December	127	4	18	28	51	228
January 1978	162	22	34	22	61	301
February	99	6	19	11	69	204
March	84	50	35	16	154	339
Apr	61	14	34	21	110	240
May	57	6	22	11	89	185
June	70	3	16	14	70	181
TOTAL	1,038	299	291	213	888	2,729
	38%	10.9%	10.6%	7.8%	32.5%	

APPENDIX G: SYSTEM STOPPAGE DUE TO SOFTWARE DEFECT

On Monday, February 13, 1978, both primary and backup computers at Beechurst Station halted, due apparently to a software defect. Systems service was halted for about four hours. The software defect allowed an operator training input (entered during a training session on February 11) to damage the operational data base. The damage was such that system operations would stop if, and only if, a vehicle was dispatched from Ready Storage in Maintenance to the Beechurst station. Since this action did not become necessary until February 13, the cause of the stoppage was hard to track down. WVU operators, however, located the cause, reproduced the anomaly, and provided the necessary information to Boeing to aid them in identifying and remedying the software.

The downtime associated with this event makes the effect of winter weather on the system appear worse than it really was, if it were used in plotting system availability and conveyance dependability. Figure 3-8 is therefore plotted using the figures for February 1978 that result when this downtime is not included.



The effect of [illegible] ges are as follows:

	Conveyance Dependability
Using all data	0.9172
Excluding data for 2/13 downtime	0.9358

Data values plott[illegible] line above.

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